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THE COAL AND IRON RECORD.

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THE ENGINEERING AND MINING JOURNAL

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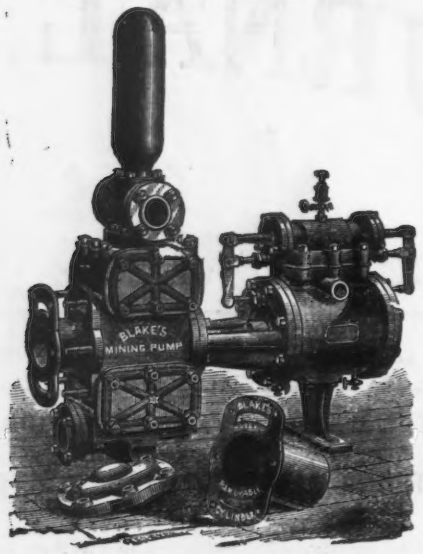

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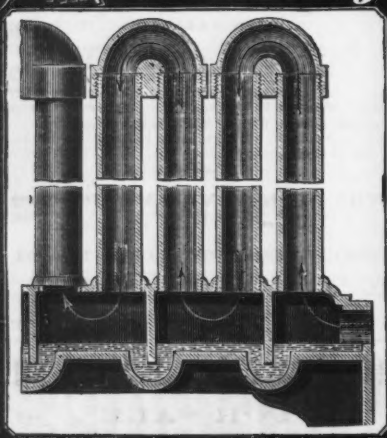

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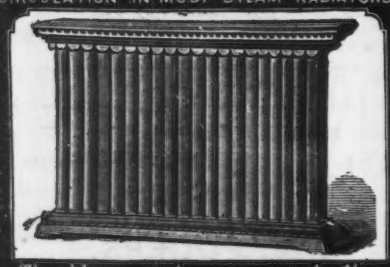

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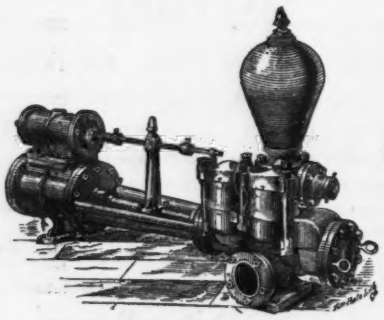

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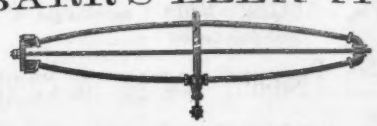
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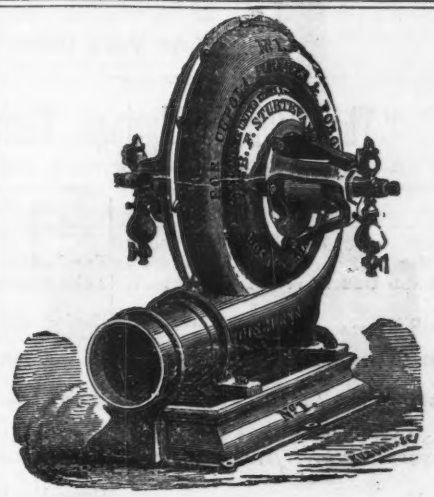

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Extract from report of Committee of Civ. Engs. appointed by Franklin Inst. to examine H. & B.'s new Transit [Dec. 1871]: "It exhibits several novelties of construction which, in the opinion of the committee, render it superior to those now in use, and in its opinion the deviations which they have made from the common styles of Transit are decided improvements."
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THE ENGINEERING AND MINING JOURNAL.

RICHARD P. ROTHWELL, C. E., M. E.
ROSSITER W. RAYMOND, Ph. D. } Editors.

NOTE.—Communications relative to the editorial management should be addressed to Mr. ROTHWELL. The articles written by Mr. Raymond will be signed with a star.

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The Institute of Mining Engineers.

MEMBERS of the Institute of Mining Engineers are recommended to start for the Cleveland meeting (and we learn that a good many are expecting so to start) by the Pennsylvania Railroad, leaving the foot of Cortlandt street at 5 P.M., on Monday, the 25th instant. Headquarters in Cleveland, the Kennard House. Letters from members of the Centennial Committee report that the receipt of subscriptions in response to the circular addressed to members is highly satisfactory. The only adverse criticism of which we have heard, is the opinion of a single member, that it would have been better (as well as less expensive) to obtain from the United States Commission accommodations for the Institute in the Centennial buildings, or to erect a cheap structure for the purpose of the Institute Headquarters within the grounds of the Exposition. With this suggestion we decidedly do not agree. There are many reasons for an independent location, outside of the Centennial Exposition. To name a single, but in our judgment a conclusive, one—a principal use of the rooms of the Institute during the Exposition will be the *evening* reunions of members and their guests; and for this purpose it is important that the rooms shall be free from supervision by outside authority as to hours, and that members shall be able to go freely at evening hours between the rooms and their hotels. After spending the day in the Exposition, and returning to town for a late dinner, no one would wish to make the pilgrimage again out to Schuylkill Park, for the purpose of lounging an hour, though it were in the best of company, and then travelling once more to town. Moreover, it is quite probable that the Centennial grounds wil not be open at night. Apart from the social and professional advantages sought by the establishment of a headquarters in Philadelphia, it would doubtless be pleasant for members and their friends to have some *rendezvous* at the Exposition itself; but this, we fancy, will be secured without difficulty. Professor BLAKE, it is understood, will have an office there, in connection with the mineral exposition of which he is in charge; and what will be more easy, natural, inevitable and delightful to everybody (except, possibly, BLAKE himself!) than to drop in upon BLAKE daily? That is evidently a matter which can be trusted to take care of itself! *

The Trial of Siney and Parks, for Inciting Miners to Violence in the Clearfield Strike.

THIS important trial, which has been going on for the past two weeks, is, doubtless, familiar to all our readers through the telegraphic reports that have appeared in the daily press. It is now drawing to a close, and in our next we hope to be able to give a full and reliable *résumé* of the case, which is one of the most important that has come before our courts. It is a difficult matter, with men as shrewd and experienced as SINEY, to prove his actual participation in clearly illegal acts; and under the cover of the rules of the Miners' National Association, which nominally discountenance strikes, it is doubly difficult to do so. We trust that strict justice will be done, and if it be found that these men, or either of them, incited the illegal acts of the Clearfield strikers, that such punishment will be meted out as will prevent a repetition of them. And this we do in the interest of the miners themselves.

While the strike was going on at Wilkes-Barre, some months ago, Mr. SINEY stated publicly that the National Association, of which he is President, did not authorize or encourage it; but as soon as the men at any of the collieries showed signs of weakness and of an inclination to go to work, Mr. SINEY was sent for to address them, and after his visit it was apparent the strike had gained strength, and the wavering were confirmed in their resistance. A strange result to come from the opinions he openly avowed.

Later.—The following is the result of the trial, and appears to be in accordance with the evidence presented in the case:

"CLEARFIELD, Pa., Oct. 7. 1875.

"The jury in the SINEY-PARKS trial to-day rendered a verdict acquitting SINEY, but convicting PARKS of riot and conspiracy, who was sentenced to hard labor for one year, and to pay a fine of $1 and the costs of the trial, which are estimated at $1,500."

Geology at the Syracuse University.

A CHANGE has been made in the arrangement of the course of instruction in geology at the Syracuse University, by virtue of which both the regular students and those desirous of pursuing a special course in this science will be benefitted. The new arrangement condenses into the months of February and March the elementary instruction in geology, which has heretofore been distributed through the first and second terms of the collegiate year. As we interpret the circular announcing the plan, the students will study geology during the two months named, to the comparative exclusion of other branches. Undoubtedly this will be more effective than a desultory trifling with the subject, in the intervals of other pursuits. Simultaneously with the elementary course, two others will be carried on, for the benefit of more advanced students. One of these will be lithological, including the description of rock and mineral species, the determination and analysis of ores, blow-pipe practice, etc. The other will be palaeontological, comprising a course of lectures on the distribution of zoölogical types in time, together with the laboratory study of one or two of these types in detail. It is intimated that the types selected for the purpose of special study next February and March will be Brachiopodes and Mammals. The circular giving conspectus of courses, names of instructors, titles of manuals and works of reference, and terms of tuition can doubtless be obtained upon application from Prof. A. WINCHELL, who occupies the chair of geology at this University. It promises also, in connection with the advanced courses, "lectures, expositions and discussions on the more salient points of geological doctrine and collateral problems, such as the age of the world; the world's future; the condition of the earth's interior; the origin of species; the methods of nature; the origin of coal, petroleum, salt, gypsum and iron ores; glacial periods; the conduct of a geological survey; geological history and biography; the connection of geology with the other sciences; the use of the imagination in science; the relations and limitations of science and philosophy." Prof. WINCHELL says, "it is hoped to see two months of intense activity, and a result affording unbounded satisfaction to all concerned." As to the first of these, there can be no doubt, if the topics covered by the programme are to be handled intelligently within the time prescribed. As to the result hoped for, the Professor has our best wishes, though we suspect that so experienced an instructor is secretly prepared for some disappointment. The plan is complete enough (barring the unexplained omission of fossil plants from the subjects to be studied); and the advantage of studying geology intensely for a while, instead of lazily and intermittently, is undeniable. Beyond that, success will vary according to the aptitude of the student and his subsequent opportunity for field and laboratory practice. Of course, complete knowledge of mineral analysis cannot be communicated in the period named. *

Light Locomotives for Underground Haulage.

THE question as to which is the best system of underground haulage is one which has not been, and, from the very nature of the case, never can be, finally determined, for the system which is best adapted to one case, may be entirely unsuited to another. The conditions which obtain in mines are exceedingly various, and each case must be considered in all its bearings before choice can be intelligently made. There is, however, little room to question the advantage of substituting mechanical for animal haulage in and about the mines, wherever the distance is at all considerable.

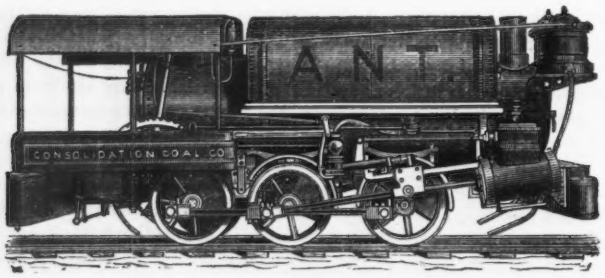
We have several times described, in the ENGINEERING AND MINING JOURNAL, the systems of underground haulage by fixed engines and chains, or endless ropes, as adopted in many European collieries, and have called attention to the application of a similar system in some of the mines near Pittsburgh, Pa. We have also noted, from time to time, the progress made in the use of locomotives underground. The question is one of growing importance, as testified by the number of inquiries we receive on the subject, and we have prepared the following statement of the work actually performed by some light locomotives manufactured by Messrs. PORTER, BELL & Co., of Pittsburgh, to whom we are indebted for the woodcuts given herewith.

Size of Cylinders.	Locality and Owners.	Grade ft. per mile.	No. of cars hauled.	Total train load. Tons.	Remarks.
Inches.					
7 ×12	BROOKS & SON, Nelsonville, O.	220	21	10	40 feet rad. curves.
"	HAYDEN & SON, Haydenville, O.	48	40	57	
"	TOWANDA COAL COMPANY, Barclay, Pa.	120	14	21	Gets out 600 tons per day.
8 ×14	GEORGE'S CREEK C. & I. CO., Lonacoming, Md.	212 to 265	10	17½	20 trips daily on 2-3d-mile road.
8½×16	CONSOLIDATION COAL CO., Mt. Savage, Md.	115	40	26	Runs 2½ miles underground.
9½×14	AMERICAN COAL COMPANY, Lonacoming, Md.	422	16	8	
9 ×14	WESTMORELAND COAL CO., Irwin, Pa.	202	26	13	
9 ×16	L.C. & M. RR., Port Henry, N. Y.	264	10	25	Rises 1,200 feet in 7 miles. Twice the work of same engine on wood rail.

LIGHT LOCOMOTIVE—For Narrow Gauge Road.

These examples show the work actually performed by these engines, but in some cases they are capable of doing much more than here stated. The usual dimensions of this class of locomotive are 7×12 to 9×16-inch cylinders, and four or six drivers of from 24 to 28-inch diameter.

The weight varies from 12,000 to 20,000 lb., and the gauge from thirty to forty-two inches.

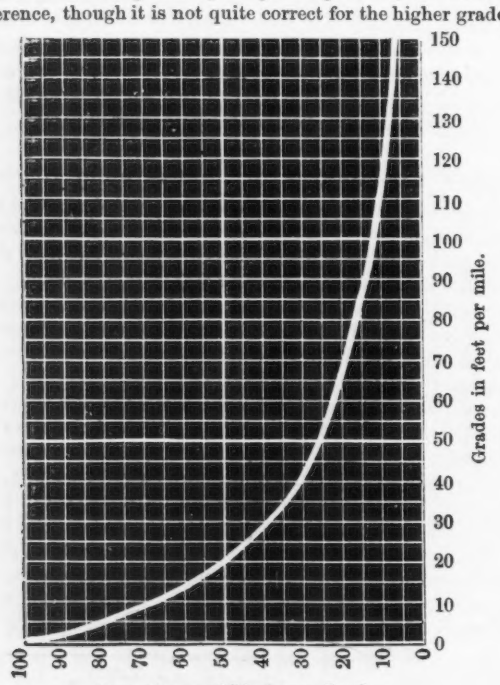


MINE LOCOMOTIVE.

One of the most notable features in the above examples is the very steep grades over which these engines work. The following table gives the power of locomotives of the different sizes on different grades.

Size of Cylinders.	Tons Hauled On Level.	On 40-ft. Grade.	On 100 ft. Grade.
7×12	275	90	40
8×14	400	130	60
9×12	450	140	70
9×14	500	150	75

The following diagram, showing the proportion between maximum load o locomotive on level and on grades up to 150 feet per mile, will be found convenient for reference, though it is not quite correct for the higher grades.



Having given the load a locomotive will haul on a level, we can see by the diagram what proportion of that load it will haul on any other grade. The diagram supposes the track to be straight and in good order.

As to the relative cost of hauling by locomotives, by fixed engines and by endless ropes or chains, we have no reliable data, the question not yet having been investigated in a satisfactory manner; and, indeed, other conditions than the relative cost would, probably, decide in most cases the adoption of this or that system. The locomotive may be counted on to do the work of from six to twenty mules, according to the conditions under which it works—and in most cases it will be found economical where it can replace four mules.

For underground haulage the chief objection to locomotives is the vitiation of the air, by the products of combustion of the coal employed. In general the roadways on which the locomotive works require a special ventilation; that is, a separate split by which the foul air is carried directly into the return air-course. In the case of certain kinds of shale roofs, the steam and heat from the locomotive are injurious, as they tend to disintegrate it, and they also greatly facilitate the decay of the mine timber. But as the special ventilation required to carry off the products of combustion is generally sufficient to carry off the steam and heat quickly, the injurious effects of these are greatly diminished.

The light locomotive is an exceedingly convenient motor, and for tracks partly or altogether outside the mines, the chief objection to it disappears, and if these advantages were more fully known and appreciated, a very notable economy in the item of "haulage" would result at some of our mines and furnaces.

The light locomotives are manufactured by the above-mentioned firm—Messrs. PORTER, BELL & Co., of Pittsburgh; by the Vulcan Iron Works, of Wilkes-Barre, Pa; the Baldwin Locomotive Works, of Philadelphia, and a number of other first-class machine shops.

The Construction of Gasworks.*

By HARRY EDWARD JONES, Assoc. Inst. C. E.

CONTINUED FROM PAGE 356.

Coke, from its porosity, is in great favor as a scrubbing agent. The author succeeded, by crushing this material to an impalpable powder, in reducing its bulk by about 40 per cent., which may be roughly taken to represent the proportion of pores to solid matter. Doubting, however, the permeability of these pores, an experiment was made to test it. A cube of coke, roughly shaped to the dimensions of 2¾ inches square by 2 inches thick, containing 15 cubic inches, of which 6 cubic inches would represent the extent of pores, was fitted into the end of a tube and carefully jointed at the edges. The tube being filled with water, the rate of filtration was watched. After the coke had absorbed 5 cubic inches of water, it began to let it pass through, and continued to do so at the very slow rate of 10 cubic inches in thirty-five minutes. Thus, as nearly as possible, fifty-three minutes elapsed before the coke passed its own bulk of liquor. This slow rate would seem to prove that the pores for the most part do not penetrate the coke from side to side. If this be so, then any material of equally irregular external conformation would be as sufficient.

It is obvious, however, that the material inclosed in the scrubber occupies space which might otherwise be filled with gas and spray of the liquor employed for purification, so diminishing the velocity of the gas and ensuring longer and more intimate contact. The difficulty is the presence in the liquor of matter which soon clogs up the fine jets necessary to form the spray. For some time the author employed, for this purpose, a Giffard's injector, which readily showed when stoppage occurred, and overcame it on more steam being turned on. The liquid, however, had to be lifted a considerable height, and in consequence so much steam was required as to slightly raise the temperature of the liquor, and so weaken its action on the ammonia.

For the removal of every trace of ammonia, and at the same time to procure liquor of great strength, the author prefers a scrubber on a principle somewhat like that of the Coffey still, having had most satisfactory results from two that have been in operation for nine months at the Watford gasworks. They are boxes of iron 20 feet high, 10 feet long, and 2 feet wide internally, and have longitudinal shelves of unwrought fir 1 inch thick, 6 inches apart, extending alternately from one end of the box to within 6 inches of the other, so as to cause the water to traverse the whole length of the shelf before it falls to the next, meeting the gas flowing in a flat, wide current in the opposite direction Fig. 8. Such a form admits of the perfect distribution of a comparatively small quantity of water, and its thorough contact with the gas, offering the least possible resistance to the latter. They are cheaper in construction than, and do not involve the pumping of the liquor or water to the excessive heights required by, the modern types of scrubbers on the common principle.

The washer or scrubber, of whatever form, is an apparatus which promises to be of great value in the hands of the gasmaker, inasmuch as all purifying agents act more energetically in a liquid form, and are cheaply and easily brought into contact with the gas without demanding manual labor. The author anticipates that ere long they may completely supersede purifiers in which solid materials are at present submitted to the action of the impurities in the gas, being removed when foul, and giving place to fresh material, by a process involving much labor of a kind not readily managed by machinery.

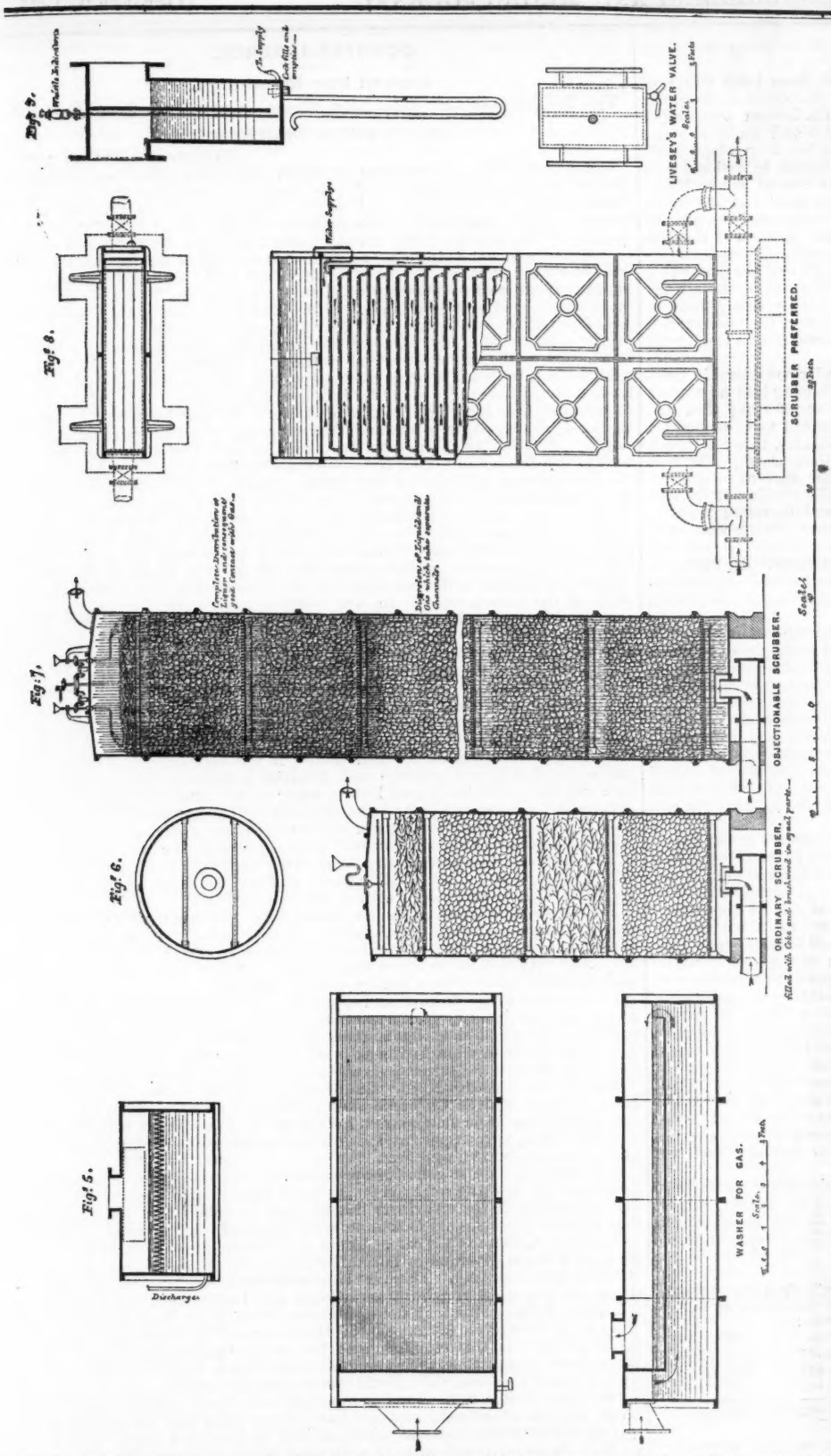
Before leaving this subject, the author desires to lay stress on the importance of carrying out to the fullest extent the processes of condensation and of washing in their respective stages.

Tar which escapes the condenser chokes up and renders useless the pores of the material in the scrubber, while, if it reaches the purifier, it causes the destruction of the material there, as well as an increase of back pressure by choking the pores. Again, ammonia which passes the scrubber will not only be value lost, but will interfere with the purifying action, and further impregnate the purifying material, so as to cause it to be more offensive when removed from the purifier than would otherwise be the case.

The purifiers should be of a size to hold such a bulk of material as that its interstices may contain a considerable volume of gas, so reducing the velocity with which the latter is passed in contact with it. Were it not for the disadvantage of causing a large amount of friction and consequent back pressure on the retort, or the exhauster, as the case may be, the dimensions embracing this bulk might be varied in any way; but for this reason area rather than depth should be the direction in which the cubic contents should be obtained. Various attempts have been made to form a rule for this, but it is submitted that it should vary with the density of the purifying material, whether lime, oxide of iron, peroxide of manganese, or other agent. With either lime or oxide of iron, the author has found considerable sacrifice of economy whenever the cubic contents of the purifiers at any one time acting on the gas was less than 4 cubic feet per 1,000 feet of gas purified per diem, and so disposed that the aggregate depth of the material in lineal feet was not more than 1-20 of the area in square feet. The stringency of the tests for impurity now employed demands absolute integrity in the valves, and the author prefers to have on the outlet of each purifier to the clean gas main a water valve sealed with fresh water on each occasion of its use. The water in the seals of the purifier-covers gets extremely foul, and to ensure clean tests, should be changed every time the purifier is recharged.

The great question of the day in purification is the removing of the bisulphide of carbon, a body with such feeble affinities and so sparsely diffused in the bulk of the gas as to present no ordinary difficulty. It has, however, been ascertained

*A paper read before the Institution of Civil Engineers of London, January 12, 1875.



composition of the bisulphide in the preceding process. With three distinct groups of purifiers this does not seem to involve any serious difficulty; but with two sets or less, except when the scrubber eliminates the carbonic acid, the action on bisulphide of carbon can hardly be confidently relied on to give a regular result, and, in consequence, variations of considerable extent are found in the results of testing. Absolute purity has not yet been attained, but so far this body appears to be capable of restraint within unobjectionable limits. It has been suggested that the ammoniacal liquor, which contains a large proportion of sulphide of ammonium, would, if sufficiently applied in washing the gas, combine the bisulphide of carbon. In the author's experience this is not found to be the case, nor does the well-known repugnance of the latter for combining in the presence of moisture accord with this view.

When purified, the gas should be measured by meter, the indications of which should be registered hourly, to enable the manager to keep an efficient check upon all the operations of the manufacture. Of course the temperature of the gas must be taken into account in registering its bulk. In small works there are means of automatic registration; but in those of any importance there is always an attendant for that and for other purposes, whose observations are more precise.

The gasholders with their tanks are a portion of the plant which, next to the retort houses, figure most prominently in a company's capital account, and therefore afford the engineer much scope for the exercise of economy in construction. Keeping in mind the great proportion which the tank bears to their whole cost, there is but little doubt the holders should, in most cases, be telescopic, developing a double storage capacity for the single expense in tank.

The proportion of the height of the holder to its diameter should be regulated by the maximum amount of pressure required, subject to the value of the area of ground occupied. At the same time, a height in each lift of less than one-fifth of the diameter does not give sufficient bearing on the perpendicular guides to stay the vessel against the tilting action of strong winds upon the dome of the crown. While it is desirable to reduce the pressure, for obvious reasons, by increasing the area in proportion to the height, yet where only limited space is available and ground is expensive, it may be true economy to increase the height, and so get a larger storage at greater expense in pressure.

Gasholders may be very light in weight without sacrifice to their efficiency, inasmuch as, of whatever diameter or height, the main bulk of the iron sheeting need not be thicker than No. 12 Birmingham wire gauge, weighing 4·38 lb. per square foot. Being cylindrical, the pressure of the gas within assists in maintaining their shape; and the sides, as they are technically called, need little framing beyond good top and bottom rings where the guide rollers are attached, and a sufficient number of uprights to sustain the weight of the top sheets from the foundation stones when the holder lands, and to prevent it crushing in the sides. The top of the holder should not be quite flat, whether it be trussed on framing or not, inasmuch as it then has to endure the maximum strain due to the weight of the whole structure when floating on the gas. Within reasonable limits it should be the segment of a sphere, having as short a radius as possible, to admit of the employment of lighter iron sheeting and to reduce the strain on the curb. Provided the curb is sufficiently rigid, no truss framing is needed, as the sheeting may rest on a cheap scaffolding of wood when the holder is landed, and be sufficiently sustained and distended by the pressure of the gas within when afloat. The author is confident on this point, as he has frequently been inside gasholders inflated with air, and has noticed the trussing hanging from the distended sheeting of the top, so as to be practically a burden instead of a support. However perfectly a roof framing may be adjusted, when the holder is lifted by internal pressure its members remain rigid while the sheeting perceptibly stretches. The sheeting never again fits the framing, which latter it sustains entirely by the attachments at the king post and curb, only reposing on it at the rare intervals when the holder is landed for repairs. At such times it might with equal advantage rest upon a fixed wooden framing in the tank, costing less than one-third of the previous arrangement.

At ordinary rates of iron, gasholders, of the kind described, can be constructed, for sizes below a capacity of 300,000 cubic feet, at about £13 per 1,000 cubic feet; above that size the cost diminishes, until at 2,000,000 cubic feet £8 to £10 per 1,000 cubic feet will represent the cost. A holder for 2,350,000 cubic feet, which had a slight truss in the top, was executed in 1866 for the Commercial Gas Company at so low a rate as £5 13s. per 1,000 cubic feet.

The external guide framing should be absolutely rigid, and strong enough to sustain the inflated holder even under the influence of a hurricane. At the same time, the constituent metal can be disposed in forms developing, far more than is commonly seen, the strength due to the weight of iron composing its member.

It is to be regretted that heavy cylindrical columns, with excessive top weight and inadequate bases, and, therefore, diminished leverage, should at the present moment be in course of erection in the metropolis and elsewhere. Such would be suitable enough for sustaining a superincumbent weight, but are out of place in resisting the lateral strain they are exposed to. At the same time, vertical diagonal ties between the columns, so commonly neglected, afford a means of conferring great stability at a small outlay of metal, and diametrical tension-rods from the heads of the columns or standards, either coupling opposite members, as seen in some of the older types in this country, or tying

that when sufficiently long in contact with an alkaline sulphide, whether of calcium, ammonium, sodium, or potassium, this impurity is reacted upon. If, therefore, any caustic alkali be submitted to gas foul with sulphuretted hydrogen, but free from carbonic acid, a sulphide is immediately obtained, which reacts on the bisulphide of carbon. So the action would appear at first sight to be simple and easily attainable. In this last condition, however, lies the difficulty. Although most alkaline bases have a higher affinity for carbonic acid than for sulphuretted hydrogen, and are, therefore, capable of removing it preparatory to the process indicated above, their affinity for the latter body is considerable; and it is not easy, in all the variety of changes and decompositions going on in the first of a series of purifiers, to prevent sulphuretted hydrogen being arrested in such quantity as to vitiate the formation of sufficient alkaline sulphide in the succeeding purifier for the extraction of the bisulphide. From this cause, results of an apparently eccentric and conflicting character are occasionally obtained, which baffle and perplex those who have the responsibility of conforming to the legal standard with respect to this particular impurity.

Thus complete purification demands three distinct processes: first, the extraction of the carbonic acid; secondly, the formation of sulphide of calcium, and the consequent action on bisulphide of carbon; and lastly, the extraction of the excess of sulphuretted hydrogen, part of which is derived from the de-

every second or third column, confer great advantage, as throwing any strain on one standard directly upon the whole number.

Gasholder tanks have usually, where soil permitted, been built either of brickwork or of masonry (economy alone determining the choice between the two materials,) well puddled round the walls and over the bottom, a mound of unexcavated material being generally left in the center and puddled over. Portland-cement concrete, in some cases without puddle, has been adopted latterly. Concrete, by its homogeneity and consequent strength, as well as by its susceptibility to receive a water-tight rendering of neat cement, seems likely to gain ground, looking to the economy to be realized in most districts by its use. All bands or perpendiculars of brickwork, belts of hoop iron, &c., are out of place in such a construction, as being unnecessary and inimical to the first requisite, viz., homogeneity. Excluding cases of exceptionally unfavorable foundations, brick tanks, puddled, have commonly cost £6 10s. per 1,000 cubic feet of capacity of the telescoped holder fitted in them, for all sizes, though the tank for the Commercial Company's holder just alluded to only cost £5 5s. per 1,000 cubic feet. A concrete tank constructed by MR. LIVESEY has been carried out at a saving of £2 11s. per 1,000 cubic feet, as compared with a brick tank of the same capacity.

The gas having been accumulated in the gasholder under considerable pressure, means have to be provided for releasing and distributing it at a pressure suitable for the ordinary purposes of illumination. For effecting this, the governor or regulator, as ordinarily constructed, has a conical valve suspended in the upward stream of gas, actuated by a balanced gasholder, through which the gas passes to the main. It is open to the objection that, having a flat base to the cone, the latter is disturbed and acted upon by the current of gas (especially when the pressure of the current is altered by the working of the gasholder,) much as a loosely-fitting piston would be, and therefore requires constant attention and readjusting of the balance weights. Many years ago, the author, to avoid the irregularity, adapted a large throttle valve to this purpose, which was free from this defect, and worked admirably. An unimportant modification has since been patented, but the salient feature, viz,, the use of this form of valve, is open to every one, and will not fail to give satisfaction to those who make trial of it.

The pressures usually given upon the system of mains range from between 1·0 inch and 1·5 inch head of water between sunset and midnight to 0·6 inch or 0·8 inch for the rest of the twenty-four hours. Such pressures are ample for every use to which gas is ordinarily put, whether in lighting or in heating. Deficient calibre in mains, services, and internal fittings, or unsufficient capacity of meter, frequently prevent an entirely satisfactory illumination within the consumers' premises. As it is well known that such defects may be partially remedied by increase of pressure at the point of distribution, it is a favorite theory that more pressure is required, the fact being lost sight of that such a remedy, besides being imperfect, involves a loss in illuminating effect as well as one from leakage, which latter falls upon the consumer through his fittings as well as upon the company on its mains and services.

Leaving the works, the distributing system should be entered upon, but so wide a field would thereby be opened, that the limits of this paper do not admit of its being thoroughly dealth with. Suffice it to say, that the first point is the selection of the main center of distribution, and, as that legitimately should be at the factory, this consideration really affects the choice of site for the works.

It will be admitted that the great point to be attended to in securing an economical distribution (*i. e.*, one accompanied by a small leakage) is to have the regulation of the pressure in the mains at all parts of the system under complete control, and to have that pressure, as far as possible, uniform with the initial pressure at the point of distribution, or, under a constant rate of variation from it. These conditions are best fulfilled, with a district of irregular contour having considerable variations in level, by distributing the gas from a mean level between the extremes, and having high and low pressure mains for supplying the respective portions of the district, thus counteracting the wellknown influence which increases the apparent pressure of the gas at the rate of about 1 inch of water for every 100 feet of altitude attained by the main. From such a center as the above, the high and low pressure mains might pass right and left, avoiding the duplication of mains, and the consequent multiplication of joints and surfaces of metal, conducive alike to increased first cost and to increased leakage.

Should such a site for the works not be procurable, with facility for carriage of material, then it may be at the highest or lowest point of the district, subject only to the disadvantage that, in either case, the high or the low pressure main must for some distance run side by side with the other without being available for supply.

TO BE CONTINUED.

Lake Superior Iron Shipments.—The following table will show the total shipments, in gross tons, from the Lake Superior iron district for the season, up to September 29, 1875, and those for the corresponding period last year:

IRON ORE.	1874.	1875.
From Marquette	365,637	379,287
From Escanaba	218 466	194,851
From L'Anse	72,483	54 999
Total	656,586	629,137
PIG IRON.		
From Marquette	19,604	24,169
From Escanaba	10,313	12,680
From Grand Island	8,698	10,008
Total	38,615	46,857

—Marquette *Mining Journal.*

Foreclosure of the First Mortgage of the Chesapeake and Ohio R. R.—A despatch dated Richmond, Va., October 5th, says: A bill of foreclosure on the Chesapeake and Ohio Railroad Company's first mortgage was filed yesterday in the United States Circuit Court for this district. An identical bill has also been filed at Parkersburg, West Va. An order preliminary to a receivership, together with an injunction restraining any interference with the mortgage property, pending proceedings, has been issued by Judge BOND. Upon the entry of the decree of sale, all the parties interested will unite in the purchase of the line and its franchises, paying therefor the securities they now hold. The judgment will clear off all existing liens on the property, and enable the corporation to obtain additional capital to complete their connections with the West.

Breaker Burned.—Messrs. GRATER, KEMPLE & Co.'s Breaker, at Locust Gap, Pennsylvania, was destroyed by fire on the night of the 5th instant. The breaker was valued at $100,000 and not insured. The fire was of incendiary origin, and is credited to the band of ruffians known as the Molly Maguires, which invest the coal regions. The watchman, who sounded the alarm, had two shots fired at him.

Large Contract for Tennessee Coke.—MR. A. M. SHOOK, the efficient agent of the Tennessee Coal and Railroad Company, has just closed a contract with Rising Fawn, for 3,000 bushels of coke daily, at 10c., delivered. The sale will, perhaps, embrace 900,000 bushels.—Tracy City (Tenn.) *Miners' Journal.*

CORRESPONDENCE.

English Iron Metallurgy.

THE BOWLING AND LOW MOOR IRON WORKS—WHITWORTH'S STEEL CASTINGS.

BY OUR SPECIAL CORRESPONDENT.

MANCHESTER, Sept. 15, 1875.

THE practicability of importing American iron into England has, within the last few months, been considerably discussed, both in this country and in the United States. It cannot be said, as yet, that our rivals on this side of the water are much frightened at the prospect of being driven out of their home markets by the American iron manufacturers; but they are interested enough to desire precise and definite information as to the cost of making the American iron, and a few of them who have recently been to the United States on an exploring expedition have shown what their conclusions are, by largely investing in Southern coal and iron lands. With these purchases to start upon, they have formed a stock company, and they soon expect to present their enterprise to the commercial world. One of the prominent promoters of this scheme thinks that by the use of Cleveland methods of smelting, iron of the ordinary qualities can be made at such a cost as will secure it a profitable sale in England, if no market can be found for it in the United States. It is expected that, in case the iron is shipped to England, it will be sent by inland navigation to one of the Southern ports, and thence by sea. Contract rates for carrying iron by rail to the Northern cities have been secured, that show a marked contrast to those which in former times were necessarily the greatest hindrance to the development of Southern iron lands. More full and definite information about this project would be given by the writer, were he not under obligations to say no more until the prospectus of the Company has been issued.

The few hundred tons of charcoal pig iron which have recently been exported to England from the United States will serve to renew again the quite common belief among American manufacturers that all the iron made in England is measurably inferior to the best qualities of charcoal and even coke iron produced in the United States In fact, however, our English cousins not only can, but do, to a considerable extent, make finished charcoal iron, and that, too, of the best quality. Very little pig iron, however, is produced here by means of this fuel, but they have some deposits of coal which, when converted into coke, fully merit the appellation which is given them, that of mineral charcoal. These seams of coal are notably found in the neighborhood of Leeds and Bradford, in Yorkshire, and by their use the celebrated Bowling and Low-Moor brands of iron are fabricated. Like most valuable articles, the deposits of this coal are not large, and underlie all the other seams of inferior coal of the same basin. Its appearance, when mined, is not calculated to give one the impression that it is a valuable coal, it having a dull color and being covered here and there with suspicious looking rusty spots. The coke made from it is equally unprepossessing in its looks, wanting the bright metallic and compact form that is usually the attribute of good coke. Small particles of slate are also mixed up with it. Analysis, however, gives the clue as to what its great excellence consists in, by showing the almost entire absence of sulphur and a considerable proportion of the alkaline bases, qualities which are supposed to render charcoal so valuable as a smelting and refining fuel.

The experience of many years has shown those who use these coals that the best iron is made when from one-third to one-half of the coke employed is produced in open heaps, the remainder being coked in closed covers. The coal not being very rich in hydro-carbons, makes a flakey coke, which, however, bears a considerable furnace burden without crushing.

The ore used at the Bowling and Lowmoor works is a nodular clayband, and, like the coal, the supply is comparatively limited. It possesses an almost entire freedom from sulphur, but contains what would seem to be a large proportion of phosphorus, often having as much as 0.5 per cent. The clayband, before being used in the furnace, is calcined by means of the slack produced in mining the coal just described. Limestone of a special quality has to be used, for so liable is the iron to deterioration in the process of smelting, that when other limestones from new sources have been tried, which chemical analysis showed to be equally as pure as the ores in general use, their injurious effect on the iron was at once apparent.

It is, perhaps, a quite general impression that the management at both the LowMoor and Bowling works is of the most conservative character possible; that everything in the machinery line is much as it was fifty years ago, and that all new processes are looked on with suspicion and distrust. The contrary, however, is quite the case. There is, perhaps, no one establishment in England that has given more faithful trials to new processes than that of the Bowling Iron Company. There are to be seen there, it is true, the old tumbledown buildings that were built many years ago, but in them one finds—here, a Siemens Heating Furnace; there, a Ramsbottom Plate Mill; Crucible Steel Works; Weldless Tyre Mills, etc. The true secret of the continued reputation of the products of this establishment lies not in the fact that they do some things in the same way as their grandfathers did before them, but because they have the most complete and minute system of inspection of all the processes of manufacture that is to be found in any iron works in the world. Long experience and many chemical analyses have shown them that uniformity in the quality of the raw materials can, with certainty, be depended upon. This being so, their success depends entirely upon their power to manipulate these materials so as to produce uniform products, and to detect and reject all defective ones. It is, perhaps, unnecessary to speak here of the inherent difficulties connected with obtaining uniform products by means of hand-puddling. As this process is still adhered to in these works, some of the precautions which are taken to ensure good results will be described hereafter.

The smelting of the iron from the ore is entirely carried on in furnaces using cold blast. The reader will, perhaps, say of this "that surely is old fogyism." But stop a moment; is it so? Without discussing the question of the relative cost of making cold and hot-blast iron, we must consider that the first great essential, in an establishment of this kind, is to have the furnaces work with regularity or without the least tendency to drive, as it is called. Now, can it be disputed that small furnaces, using well-mixed materials and consuming them slowly, are the ones most likely to fulfil these conditions? Then, again, too, is it nothing but prejudice that makes certain brands of cold-blast iron sell in the market for considerably more than iron made from the same materials, but smelted by hot blast? These are quite practical arguments that the Bowling people use to defend their practice.

The furnaces in use at the works range in height from 38 to 55 feet, the smallest one having been erected in 1788. The casing, as it was originally constructed, is still in good condition, which is owing, no doubt, to the care taken in its construction and in the management of the furnace.

The blast pressure used in all the furnaces is about 1¼ lb. The newer fur-

naces have been made higher, and in one case with a closed top, which arrangement does not cause any deterioration or irregularity in the make of iron, while it furnishes considerable waste gas for generating steam. The older furnaces have two, and the newer ones three tuyeres, at a height about three feet from the hearth bottoms. As in many charcoal furnaces, water tuyeres are not found necessary. The four older furnaces are built square at the throats, which are crossed by V bars to ensure an equal distribution of the materials in the furnaces. To make the iron, about 45 cwt. of coke, equivalent to 3½ tons of coal, are used, one-half of which, as has been stated, is burned in open heaps. The carefully selected ore is reduced to pieces not larger than 3 inch cube, and in its calcined state contains from 40 to 45 per cent. iron. The limestone, a nearly pure carbonate of lime, is also broken into small lumps. About 17 cwt. of the limestone is used per ton of iron made. The four newer furnaces which are now running make about 240 tons a week, of which the furnace, 55 feet high, makes 75 tons.

Most of the iron made is what they locally call "half kished," that is, where the pig, when broken, shows a close-grained graphitic structure, something like that seen in No. 1 charcoal cold-blast iron, while the lower half is like gray forge iron. This corresponds with ordinary No. 2. "Bulls Eye," or No. 3, has the "kish" in the center, surrounded by the close-grained iron, while No. 4 is all close-grained. The latter quality is seldom made.

The slags have the greenish-yellow hue which shows the presence of manganese.

All of the iron, preparatory to being puddled, is refined in the old-fashioned refinery fires, but having tuyeres only on one side, which, of course, makes more time necessary to complete the process, but ensures the more thorough working of the iron. The puddling furnaces are built with a "dandy," a thing seldom seen in the United States, it being nothing more than a chamber in the neck of the furnace, in which the iron for the next charge is being heated by the waste flame from the ore which is being operated upon. This, of course, economizes some heat and expedites the operations, so that, by having a puddler and two men to a furnace, ten 300 lb. heats are produced in 12 hours by them.

The bottoms and bridges of the furnaces are made of cast-iron, the latter having an air flue through it. The sides of the furnace are cased in fire-brick. The lining to the bottoms of the furnaces are made by first working up a scrap ball on them, and then adding a few shovels full of rich cinder. The charge for puddling, which consists of ten per cent. of their own boiler scrap and ninety per cent. of the refined iron, is then added, and in a little more than half an hour the iron is ready to make up into balls, which number from two to three to each furnace heat. The balls are then thoroughly hammered out into flat plates and stamped with the puddler's mark. When cold, they are broken and carefully examined as to the texture of the metal and amount of cinder remaining, and the pieces are sorted in the same way as is done with blister steel before remelting. The best quality of plate, when in this state, shows a fine and uniform structure, almost rivalling Bessemer steel in this respect. These assorted pieces are then repiled and heated and hammered, the heater adding his mark to the pile. This process of piling and reheating is repeated from three to four times before a piece is ready for the plate mill. The method of piling is such that the planes of welding, instead of being parallel to the surface of the finished plate, are perpendicular to it, thus greatly lessening the probability of blistering when the plate is used. The iron, when ready for the plate mill, is in one thoroughly welded mass squared up upon its edges, and, as a consequence, when the finished plate is in the rough, its edges are generally so true that they hardly need cutting. The plate mill at these works is a very fine one, capable of rolling sheets 11 feet in width. While there, I saw several plates having dimensions as great as 14 feet by 8½ feet by ⅝ inches.

The risk in making these large plates is very great, for if the slightest defect can be detected in them after rolling they are condemned and cut down to smaller sizes, which are sold at about one-half the price of the large ones. The finished plate is then stamped with the puddler's mark, the heater's mark and the roller's mark, of which complete records are kept, so that after years of use they can tell just what treatment it had received in manufacture, should any defects have been discovered. Pieces are also cut from each plate and tested as to their qualities when hot and cold. These boiler plates they then sell with every possible guarantee as to their quality, and at such prices, that when the buyers find any defects—which it is true they sometimes do—they send the pieces back, even after much labor has been expended in shaping them, and when the defects would in other cases be thought too trifling for notice.

The tensile strength of this iron is not extraordinarily high, seldom being over 22 tons per square inch of original section, but the percentage of elongation before breaking is very great, which is the reason of its high value for boiler plates and rivets.

So valuable does this iron become in the last stages of its manufacture that every effort is made to keep down the loss from oxidation, and, with this object in view, Siemens' furnaces have been in use for some time. Crampton puddling furnaces have been tried, but with no great success.

The manager fully recognizes the advantages which mechanical puddling seems to have over the hand process, and is only waiting to have it a success elsewhere before introducing it into his works. It is only a few years ago that a Bowling or Low Moor tyre was looked upon as being as nearly perfect an iron as it were possible to make such things, but cast steel has very rightly supplanted them in general use, although many railroad carriages, and some locomotive tyres for the 10 feet drivers on the Great Northern locomotives that pull the Flying Scotchman train along at the rate of 50 miles an hour, are made out of the Bowling iron. Recognizing the superior qualities of steel over iron for this purpose, they have put up a melting department and make cast steel by both the crucible and Siemens-Martin process, which they fabricate into weldless tyres. They make their crucible steel almost entirely out of their own boiler scrap mixed with old retired tyres and spiegeleisen, while the Siemens-Martin steel is composed of their own pig mixed with Bessemer scrap.

After going over the extensive building, where the various operations are carried on, and after seeing the large number of men employed, the visitor is apt to be astonished when told that the total weekly production seldom exceeds 200 tons of finished iron. It is truly an example of quality, not quantity, and when it is possible to get as much as 48s. per cwt. for some of their iron, as they do, one does not need to ask whether the establishment is profitable to the owners.

At the Low Moor Iron Works, the operations are carried on in almost identically the same manner as at the Bowling Works. Their capacity for production is, however, somewhat larger, and they use some cold-blast iron other than their own. There furnaces are six in number, the first of which was erected in 1790 by the grandfather of the present furnace manager. At one time it was in blast for 22 years without blowing out.

One piece of machinery still in use there shows that the mechanical ideas of some constructers in those days were somewhat at fault. It consists of an engine working a pump which raises water to turn a water-wheel, which, in its turn, performs a hoisting operation. Like the Bowling Company, the Low Moor Co. continue to make iron tyre, using, however, a mixture of blister steel and refined metal to produce the iron from.

These two establishments are both fortunate in possessing what may be called a speciality in the iron trade. Hard times among the ordinary manufacturers hardly affect them at all, as there is always a demand for these special productions and the supply is never large enough to glut the market. Other manufacturers say "We can make as good iron as they can, only they have the name and we have not." That this does carry considerable weight with it is no doubt true, but at the same time, it calls for a corresponding vigilance in maintaining that reputation.

From fine iron to fine steel is but a short jump, and here, in Manchester, one finds the latter in what seems to be almost perfection. Sir I. WHITWORTH'S process of casting steel under pneumatic pressure has excited much interest among those who know the great difficulty in making large steel castings that are free from blow holes or "honeycombing." Once formed, these honeycombs, although seemingly, are probably never welded by subsequent heating and hammering. Many efforts have been made by various experiments to force or draw these gas bubbles out of the metal while it is in a molten condition, but want of proper apparatus has in every case defeated these attempts when made with castings of any size. Sir I. WHITWORTH, possessing abundant mechanical skill, and, what is fully as necessary, abundance of money, has, at last, succeeded in the attempt, and he is now able to produce pieces of several tons weight that can be said to be thoroughly homogeneous. This apparatus has been described in general terms several times, but, as Mr. WHITWORTH is not as yet satisfied with its detailed arrangement, he makes no public exhibition of it until his final patents are secured. The apparatus, as it has been described, consists in moulds so arranged in connection with hydraulic machinery that immediately after the steel has been cast a plunger is forced down against the molten metal with such a pressure as to squeeze out all the gases that would otherwise remain and form blow holes. In addition to this, he has invented hydraulic machinery for forging out this metal into its rough shapes.

The steel used is generally produced by the Bessemer process, but in some cases is made in Siemens-Martin furnaces. The amount of labor that is expended on this metal before being brought into its finished state and the cost of the machinery have been so great that WHITWORTH & Co. charge such a price for it as precludes any very general use of it.

Those who are acquainted with the subject of marine engine construction well know that the internal wear of the steam cylinders, where ordinary cast iron is used, is so great as to have made engineers for many years desire, if possible, to get steel linings for them. Some, in fact, have been made, and have been in use for many years, thoroughly proving their great superiority to cast-iron. So enormous has been their cost, however, that they have only been used in a very few instances.

The metal made by WHITWORTH'S process is peculiarly adapted for this purpose, and at their works they are constantly engaged in making these linings. The celebrity of WHITWORTH'S guns was well established before he invented this new steel, but it has proved in this branch of his business to be admirably suitable. All cannon, both large and small, are now entirely composed of the compressed steel, the larger ones being built up on the hoop or band system such as is employed at Woolwich Arsenal, with this difference that while there the bands are made by forging together wrought iron coils, WHITWORTH uses the solid steel. Its strength being more than double that of the wrought iron, a corresponding reduction in size is made in the construction of the cannon, or rather, while the weight is much reduced much heavier charges of powder and projectiles can be used, thus securing greater range and effectiveness. All cannon made by WHITWORTH & Co. are warranted to shoot effectively at a distance of five miles, and those who were engaged during our late war in bombarding Charleston will remember that our Southern brethren made some of these same guns shoot a great deal further. WHITWORTH & Co. make all their guns with the hexagonal bore, they thinking this system of rifling much superior to the ordinary spiral groove one. The shot and shell are given the same section and twist, and are generally made with flat, square heads, as after a long series of experiments the conclusion has been reached that this shape gives a maximum penetration, while under water it is more effective than any other form. Nothing but practical proof would convince most persons that a flat headed shot would penetrate better than a pointed one, but these facts have been well determined.

Quite recently, WHITWORTH & Co. have been filling an order for the Brazilian Government, which included two twelve-inch muzzle-loading rifled guns, one of which I saw in its completed state. The shell it throws is about four feet long and weighs a little over a thousand pounds. As these shots cost about $250 a piece they must needs hit something when they fire them off. The internal tube of these guns is, of course, made of a single piece and so extraordinarily accurate is the fitting that after use these tubes can be forced out of the guns by hydraulic pressure and replaced by new ones.

Critical Examination of the Value of Naphthaline and Petroleum as Substitutes for Cannel Coal.

(Bayerisches Industrie und Gewerbeblatt, No. 1, 1875, pp. 1–5.)

WITH the object of improving some of the processes for increasing the illuminating power of poor gas, by adding materials containing naphthaline, the author made a series of experiments. The mixture of naphthaline vapor with the gas, or the conversion of naphthaline into permanent gases of high illuminating power, by great heat, would give the desired result. But the author shows that hydrogen, saturated with naphthaline vapor, deposited the latter almost completely at about 93° Fahr., the gas then burning with a feeble blue flame. As coal gas, even in summer, is cooled in the mains far below this temperature, naphthaline would fail to increase the illuminating power. It was also found that, when naphthaline and petroleum vapors were passed through incandescent tubes filled with pumice, the yield of gas was smaller than with petroleum alone, the naphthaline escaping decomposition. Hydrogen and naphthaline vapor were passed through white-hot pumice; the gas burnt with the pure blue flame of hydrogen. From these observations, the author concludes naphthaline to be useless for the preparation of illuminating gas. As regards the distillation of coal or peat saturated with petroleum, or caustic or hydrated lime moistened with petroleum, it is shown experimentally, that the petroleum vapor, heated by itself, gives better results, and that pure petroleum gives a larger yield of permanent gas than the residues from the petroleum distillation.

One of the experiments was with petroleum having a specific gravity of 0·789,

containing no constituents of which the boiling point was below 302° Fahr. About 80 grammes were distilled in a retort, the vapors were passed through a porcelain tube filled with pumice and heated to redness, the gaseous products were cooled by snow, and the permanent gases measured. The experiment lasted an hour and a half, by which time the boiling point had risen to 550° Fahr.; about ⅓ of the petroleum was converted into permanent gas, ⅓ was condensed, and ⅓ remained in the retort. The gas obtained burnt with a smoky flame from ordinary gas-burners, but when mixed with a poor gas, it gave in suitable burners a good flame.

The following numbers permit some comparison between petroleum, Boghead coal and Saarbrück coal.

1 cwt. of petroleum		yields	1,316	cubic	feet of	gas.
"	Boghead coal	"	641	"	"	"
"	Saarbrück	"	455	"	"	"

The illuminating power of 1 cubic foot of gas from

Petroleum	is 3·14 oz. stearin.
Boghead coal	" 2·45 " "
Saarbrück	" 0.70 " "

For an illuminating power of 300 lb. of stearin, the gas obtained from 1 cwt. of petroleum, from 2·6 cwt. of Boghead coal, or from 12·5 cwt. of Saarbrück coal, would be required. The cost of 1 cwt. of petroleum in Europe is much greater than that of 2·6 cwt. of Boghead coal, and although 12½ cwt. of Saarbrück coal would cost more in many parts of Germany than 1 cwt. of petroleum, 8 cwt. of coke produced in the manufacture would cover half the outlay. The numbers for petroleum were obtained from experiments on a rather small scale, but supposing them to be verified by the experience of a larger trial, petroleum would be in Germany a dearer material than Boghead or Saarbrück coal.

W. H. D.

Combinations of Capital and Labor.

PROFESSOR LEONE LEVI read lately the report of the English Committee on Combination of Capital and Labor. The following are extracts:—The chief functions of combinations, whether of capital or labor, being to operate on wages, your committee were anxious to ascertain by what criterion the parties interested ordinarily judge of the sufficiency or insufficiency of existing wages. The first test of the sufficiency of wages is the relation they bear to the cost of the necessaries of life. "The minimum of wages," said Professor ROGERS, "is the barest possible amount upon which a workman can be maintained; that which, under the most unfavorable circumstances, a man is able to obtain." But the minimum thus estimated can only be, and is, submitted to under circumstances of extreme necessity. "I believe the minimum rate of wages," said one of the representatives of labor, "is that which, under the worst circumstances, the worst workman gets from the worst master." We cannot, therefore, take the minimum rates so considered as a proper basis for the sufficiency of wages. Disagreements between employers and employed are often produced on the subject of wages by the fact that all the elements of the case are not within the cognizance of both parties; experience showing that in making a demand for an advance of wages, or for resisting a fall, workmen are of necessity groping in the dark as to the real circumstances of the case. One of the chief advantages supposed to result from the organization of trade unions is the competency of their leaders to give solid and practical advice to those interested, as to the condition of the labor market; and we have no doubt that this duty is in the main honestly performed, but it is very much to expect that such leaders should universally possess large and liberal views enough to vindicate the exercise of their enormous power, and such constant and accurate knowledge of the multiple facts of the case as would enable them to exercise an almost infallible authority. On the other hand, were it possible for employers who are not in the dark in such matters, to make known to their own workmen the grounds of the action they propose taking, before the resolve is carried into execution, your committee are convinced that many disputes would be avoided, and much of the jealousy which now exists between the parties would be removed.

It is, perhaps, a natural but unfortunate circumstance that employers are seldom found to take the initiative in allowing a rise in wages when the state of the market permits it, as they do in case of a fall, and spontaneously to offer what they must sooner or later be compelled to grant. A more prompt and politic course on their part in this matter would go far to neutralize the hostile action of trade unions. Your committee were anxious to ascertain how far it is in the mind of the employed that the employers obtain for themselves too large a share of profits at their expense. Your committee were assured that no such doubts are entertained, though cases were produced supporting such suspicions, by reference to the time of the great rise in the price of coals in 1873, when workmen's wages did not, in the opinion of the representatives of labor, rise to anything like the proportion of the masters' profits. Your committee admit that in cases of great oscillations in prices, the share participated either by the employers in the shape of profits, or by the employed in the shape of wages, may be for a time greater or less than their normal distribution would justify. In the end, however, wages and profits will be divided among the producers in proper proportions, and if at any time profits or wages should be larger than they ought to be, we may be quite sure that ere long the competition of capitalists will tend either to the lowering of prices or the raising of wages, so as to make profits and wages gravitate towards each other. Immediately allied to the question of the determination of the minimum of wages is that of their uniformity. In the opinion of many trade unions, all workmen of average ability in any trade should earn the same wages, the average ability of each man being understood to have been determined in advance by the fact of his being admitted as a member of the union. But a man is subject to no examination, and is generally admitted upon the testimony of those who have worked with him, whose evidence must frequently be fallacious and insufficient. Nor does it appear that the rejection is absolutely certain even if the applicant should not be deemed a man of average ability, the acceptance or rejection of the party being always optional with the lodge to which he is introduced. Your committee are therefore not satisfied that any guarantees exist that every member of a union is able to earn a fair day's wages for a fair day's work; and they cannot, therefore, agree in the proposition that all workmen should be entitled to uniform wages on the ground of uniform ability. But another reason has been alleged for the uniformity of wages—which is still less tenable than the former, viz., a supposed uniformity of production independent of skill. The right of the workman to a uniform standard of wages was stated to be the production of an article which, though demanding less skill to perform, is of equal utility and is proportionally as profitable to the employer. Your committee must, however, entirely demur to the principle that, in the apportionment of wages, no account should be taken of the skill brought to bear on the execution of the task, since a system of that nature would act as a premium on inferiority of workmanship. Again, by another test should the right of each individual to earn certain wages be determined, and that is by his productive capacity. The more skillful a man is the more he will produce. But whilst in so far as this answer was correct, it contradicted the principle embodied in the preceding test, the answer itself did not take sufficiently into account that skill is not the only element in effectiveness of labor. There are qualities of mind, judgment, and even of heart, disposition, and of moral character, which go far to increase or diminish the efficiency of labor; and of such qualities the employer is, of necessity, a far better judge than any union can be. That under ordinary circumstances wages in any trade should tend to uniformity is quite possible. The facility of communication and the extension of intercourse of necessity equalize prices and wages, but any attempt to compel uniformity of wages among any large number of men of varied capacity must of necessity prove a source of disappointment. Much, again, may be said in favor of a common standard of wages in any industry, as avoiding the embarrassment necessarily encountered in any attempt to adjust the rate to the exact worth of each individual. Yet it is impossible to ignore the fact that, whilst a uniform rate is sure to operate unjustly in favor of persons who may be wanting in fairness of dealing or capacity for workmanship, in the nature of things it is almost incapable to exist over a wide area, having regard to the varieties in the prices of fuel, carriage, house accommodation, or of the means of livelihood, as well as in the cost of raw materials and in the processes employed as affecting the rate of production of each individual. On the whole, your committee find that an absolute uniformity in the rate of wages, in any trade, is neither just nor practicable, whilst any effort to compel uniformity in the amount of earnings of any number of individuals must prove fallacious and wrong as an illegimate interference with the rights of industry. A still more important question in connection with the subject is, how far combination of any kind can affect permanently or temporarily the rate of wages. Upon this, as might be expected, the most divergent opinions are held by the representatives of capital and labor. The employers of labor, standing on the solid principles of political economy, deny that combinations can under any circumstances affect the rates of wages, at least in any permanent manner. The argument adduced being that, if workmen are entitled to higher wages they are sure to get them, since, under the law of supply and demand, whenever it is found that profits trench unduly upon wages, fresh capital is sure to be introduced which provides for the raising of wages. The employed, on the other hand, confidently appeal to past experience, and point to the fact that almost every increase of wages has been due to the action of trade unions. They say that without combination workmen cannot secure the market price of their labor, but are, to a certain extent, at the mercy of their employers. That in trades where one establishment employs a large number of workmen the employers can discharge a single workman with comparatively slight inconvenience, while the workman loses his whole means of subsistence. That without the machinery of combination the workmen, being dependent upon their daily work for for their daily bread, cannot hold on for a market. Your committee are not prepared to deny that combinations can render useful service in matters of wages; but they think that it is impossible for them to frustrate or alter the operations of the law of supply and demand, and thereby to affect permanently the rates of wages. Combinations may hasten the action of those laws which would undoubtedly, though perhaps more slowly, operate their own results. There is yet another way in which trade unions may prove useful, and that is by rendering wages more sensitive to the action of the state of the market, and so preventing the influence of custom to stand in the way of the operation of supply and demand; for there are such occupations, as agriculture, where custom often exercises imperious rule even upon wages.

After making every allowance, your committee cannot admit that combinations have any power either to raise permanently the rate of wages, or to prevent their fall when the conditions of trade require the same, as recent experience abundantly shows, and, whilst admitting that combinations may be beneficial in accelerating the action of economic laws, your committee cannot be blind to the fact that they produce a state of irritation and discontent which often interferes with the progress of production. The report then considered the effect of combinations on production and trade. What is, perhaps, most objectionable in combinations of labor is the method they often pursue in order to operate on the rate of wages; for they are not content with making a collective demand on employers for a rise, but endeavor to force it, or resist a fall, by restricting the supply of labor, and increasing the need of it. The only other question on which your committee will report is whether an artificial restriction of labor or of capital, can under circumstances be economically right or beneficial. It is, indeed, scarcely necessary to say that any restriction of labor or of capital, having the effect of limiting production, must of necessity prove injurious. Yet it may be a point for consideration whether, under certain circumstances, it may not be better for either labor or capital to submit to the evil of restriction in order to avoid a still greater evil, of producing at a loss, or working at rates of wages not sufficiently remunerative. The laborers justify their proceedings in this respect by reference to the practice of producers. There is little or no difference in the relative position of capital and labor as respects their need of continuous production. Primarily, both employer and employed alike depend upon production as their only source for profits and wages. Whilst the employers have the maximum interest in producing as much as possible, from the fact that the fixed capital which they cannot withdraw would lie dormant and unproductive, while the forge or mill is silent, the employed find it to their interest to aid in such production, inasmuch as they depend upon it for their means of subsistence. The economic effects of strikes and lock-outs are well known, and it matters but little which party in the contest in the end may prove successful. In recent years strikes and lock-outs have occurred among coal and iron miners, the building trade, engineers, the cotton trade, shipbuilders, and most of the trades and industries of the country, each and all of which have caused serious losses on the community at large. In the opinion of your committee a well-devised system of conciliation is the only proper and legitimate method of solving labor disputes. And your committee cannot too strongly express their sense of the grave responsibility which rests on either employers or employed when, regardless of consequences, they resort to a step so vexatious and destructive as a strike or lock-out.

Resignation of Officers of the Louisville and Nashville and Great Southern Railroad.—At a meeting of the Directors of this Company, on the 5th inst., THOS. J. MARTIN, President, made known his intention not to be a candidate for renomination. On the 1st inst., ALBERT FINK, Vice-President and Superintendent, resigned his offices. Regret, owing to the action of the above-named gentlemen, was expressed by the Directors.

Influence of Silicon, Sulphur, Phosphorus and Manganese on the Qualities of Iron.

By Richard Akerman, of the Stockholm School of Mines.

continued from page 214.

THE ACTION OF MANGANESE ON FURNACE-SLAGS.

Seldom, if ever, perhaps, is the whole of the manganese occurring in a furnace-charge taken up by the pig iron, but a greater or less portion thereof, in consequence of the difficulty of reducing manganese, even when the charge is as basic as possible, remains in the slag as protoxide of manganese, and the question now is what action it exerts upon it.

The protoxide of manganese is commonly thought to increase the fusibility of the slags, and in some degree this is, perhaps, correct enough, inasmuch as slags with the same proportion between the contents of silicic acid and the bases are in general the more easily fusible the more bases the slag contains; but the action of protoxide of manganese in this respect was of old much overestimated, and it appears at least to be undeniable that it does not increase the fusibility of furnace-slags in so high a degree as protoxide of iron. For, in order to be smelted at the ordinary furnace temperature, common furnace-slags must not be more basic than about the mono-silicate ($R^2O^2SiO^2$); and it appears that this even holds good for furnace-slags very rich in protoxide of manganese. Thus, in some experiments in making spiegeleisen, instituted by J. G. Clason, at Dormsjö, in the year 1864, the slag was near to grow stiff in the furnace, though the temperature was tolerably high, and to facilitate its running out powdered quartz required to be injected through the tuyeres. This slag, however, contained not less than 18·23 per cent. protoxide of manganese, and was otherwise not so basic as completely to correspond to the mono-silicate, inasmuch as it consisted of

		Contains Oxygen.	
Silicic acid	3·80	..	20·27
Alumina	1·47	..	0·69
Lime	26·63	7·61	
Magnesia	14·78	5·91	
Protoxide of manganese	18·23	4·10	
Protoxide of iron	0·99	0·22	17·84
	100·10		

On the other hand, a furnace slag may be much more basic than that it corresponds to the mono-silicate, through protoxide of iron taken up when the action of the furnace is very imperfect, and this, notwithstanding that it shows no disposition to grow stiff in the place.

This certainly does not show that the protoxide of manganese cannot also in some degree increase the fusibility of the slags, but, as far as I can find, its influence on their fluidity is much greater than on their fusibility. For when slag rich in protoxide of manganese is rightly fused, it is very fluid, and the too common exchange between the ideas fluidity and fusibility is, perhaps, the real cause why the protoxide of manganese has been considered so essentially to increase the fusibility of the slags.

Furnace-slags containing manganese are easily recognized by the reddish-brown surface film which commonly covers them, and which is caused by a part of the silicate of protoxide of manganese, when heated, being decomposed by the air coming in contact with it, which brings about the formation of a more highly oxidized degree of manganese, reddish-brown in color, on the surface of the slag.

In this way a very moderate content of manganese makes itself visible; but, on the other hand, a very considerable quantity of protoxide of manganese is required to render apparent any influence on the appearance of the fracture of slag. Furnace-slags, very rich in protoxide of manganese, are commonly yellowish-green and yellowish-brown to brown. It is properly the glassy portions of slags that are brown, while the crystalline portions are generally yellowish-green to wax color. Spiegeleisen slags, rich in manganese, are nearly always yellowish to brownish-green, and it appears as if the very common grass-green color depended on sulphur occurring along with manganese in the slag.

THE INFLUENCE OF MANGANESE ON THE QUALITY OF IRON.

Manganese Increases the Power of Iron both to take up Carbon and to Retain it in Combination.—The principal action of manganese upon iron is to increase its power of combining with carbon, so that the richer in manganese a pig iron is the more difficult is it for it to become gray. Sulphur also increases the power of iron to retain in combination the carbon occurring in it, but the difference between the action of sulphur and manganese in this respect is that the former substance rather counteracts than promotes the taking up of the carbon, while the power of the iron to combine with carbon, on the other hand, increases with the content of manganese, so that pig iron rich in manganese, spiegeleisen, often contains about 5 per cent. carbon and even more. So large a content of carbon is, on the other hand, very infrequent in pig iron poor in manganese.

On this circumstance, and with the amount of carbon, the increased disposition of the iron to separate into large crystals, again depends the fact that pig iron rich in manganese commonly is lamellar; for that the coarsely crystalline texture is not caused directly by the content of manganese by itself, appears from this, that the appearance of the fracture in iron rich in manganese with a lesser content of carbon than common spiegeleisen is not lamellar; or, at least, has no large plane surfaces, but is more granular in fracture.

The circumstance stated above, or the property of manganese to increase the power of iron both in taking up and retaining carbon in combination, was denied by Karsten*, and after him by several other metallurgists, as Scheerer, etc.†, who, instead, sought the reason of the special propensity to become white in pig iron produced from charges rich in manganese in the easy fusibility of the furnace-slag depending on its content of protoxide of manganese. Now it is very doubtful, as has been shown above, if the power of the protoxide of manganese to sink the point of fusion of a basic furnace-slag is so specially noticeable; but if this is also taken to be the case, and in consequence thereof it is admitted that a charge rich in manganese can, for that reason, conduce to the production of a white pig iron—inasmuch as, in proportion to a charge's fusibility, a lower degree of temperature may be employed in the furnace, whereby again the separation of graphite is counteracted—it may be taken for granted that if the action of manganese were limited to this, the pig iron would not be white any longer than the low furnace temperature was employed, which was thus rendered possible. This, however, is by no means the case; but if the charge is very rich in manganese and sufficiently basic to admit of a considerable reduction of manganese, or the formation of a pig iron rich in manganese, the furnace may, on the contrary, be kept very hot without the pig iron becoming gray, and such a high temperature is indeed even necessary for the production of a spiegeleisen very rich in manganese, for without a very high temperature no considerable quantity of the manganese is reduced.

(*) "Eisenhüttenkunde," 3te Ausg., T. 1., p. 541.
(†) "Lehrbuch der Metallurgie," Bd., p. 2, 33.

As a very strong reason for his view that the content of manganese by itself does not increase the power of iron to combine with carbon, or its propensity to be white, Karsten brings forward the circumstance that the content of manganese is in general greater in the gray than in the white pig iron produced from charges containing the same quantities of manganese; but this shows nothing except the fact already stated, that the content of manganese in pig iron is greater the higher the temperature in the furnace has been, when other circumstances are the same, and that the action of manganese on the power of iron to combine with carbon is not so powerful as to prevent a pig iron with a moderate content of manganese from being gray with a high furnace temperature.

In order to produce a gray pig iron from a furnace-charge containing a moderate quantity of manganese, a higher temperature, in fact, is required than if the charge had been free from manganese; it is, however, not impossible from such a charge to obtain such an iron, and it is therefore clear that the content of manganese by itself must essentially increase the power of the iron to retain carbon in combination.

The Influence of Manganese on the Quality of Pig Iron.—A consequence of the circumstance just stated, that manganese increases the power of iron to take up, and combine with, carbon is that pig iron containing more manganese than usual is commonly rich in carbon, and yet white; but the greater the content of combined carbon is, the more largely crystalline, the brittler and harder is the iron; and the pig iron which is rich in manganese commonly also possesses those qualities which yet, perhaps, ought not to be ascribed directly to the manganese, but are properly caused by the large quantity of combined carbon which the iron contains in consequence of its richness in manganese. A pig iron containing a considerable quantity of manganese is, in consequence of this, naturally unfitted for common foundry purposes, for there is required for these, on the contrary, a pig iron, which can be got white only with difficulty.

Manganese increases iron's fluidity, but it is thought rather to highten than lower its point of fusion, inasmuch as an iron with the same content of other substances is fused with greater difficulty in the same proportion as it is rich in manganese, but when fused the iron which contains manganese in general possesses great fluidity.

Manganese diminishes the magnetic quality of pig-iron very considerably, so that, when rich in manganese, it is sometimes even quite unmagnetic. On the other hand, according to S. Rinman, pig-iron rich in manganese after powerful heating becomes magnetic, and yet more remarkable is it that he claims to have made unmagnetic pig-iron buttons rich in manganese magnetic merely by gently beating them out with a hammer.

The Influence of the Content of Manganese on the Behavior of Pig-iron during Refining.—In full correspondence with the difficulty of reducing manganese stands the ease wherewith it takes up oxygen, and during the refining of pig-iron containing manganese it is in consequence generally the case that manganese and silicon are first oxidised and removed from the iron. Manganese even in some measure tends in this way to withdraw silica from its combination with iron, for the protoxide of manganese affords the silicic acid which is formed a strong base to enter into combination with immediately. A consequence of the ease with which manganese is oxidised is that varieties of pig-iron containing manganese always yield refinery slags containing protoxide of manganese; but if the loss during the refining is to be kept from being too great it must be so managed that less iron is oxidised than otherwise, and the consequence of this is that refinery slags rich in manganese commonly contain less protoxide of iron than similar slags containing less protoxide of manganese. The refining power of a slag depends, however, on the ease with which it yields oxygen to the pig-iron; and as protoxide of manganese is much more difficult of reduction than protoxide of iron, it is evident that a refinery slag must be less refining in the same proportion as the greater part of its content of iron is replaced by manganese.

Further, the refining, both in the hearth and the puddle furnace, is more difficult in the same proportion as the iron and slag are more fluid, for it is just through their being mixed together that the refining is brought about; but so long as these substances are very fluid no true mixture of the iron with the slag can be accomplished in either of the processes referred to above, for immediately after being mixed they separate again, and the slag being specifically lighter floats upon the iron. As, however, the content of manganese favors the fluidity both of the iron and the slag, the refining power of a slag must, in consequence, be less in the same proportion as a greater amount of its content of iron is replaced by manganese, and when other circumstances are similar a pig-iron is more difficult to refine the greater the amount of manganese it contains. As an additional reason for this it may finally be added that the more manganese the iron contains with so much the greater force does it retain the carbon combined with it.—*Iron.*

to be concluded in our next number.

On the Construction and Working of the Blast Furnaces

AT THE ROYAL IRON FOUNDRY AT GLEIWITZ, IN UPPER SILESIA.

By H. Wiebmer.

(Zeitschrift für das Berg, Hütten und Salinenwesen, xxii., part 5, pp. 253-297.)

These works are historically interesting, as being the first on the Continent erected for smelting with coke. The first furnace, constructed by Herr Wedding and an English smelter named Baildon, was blown in during the autumn of 1796. The capacity was about 1,400 cubic feet, and the weekly production, which was at first only 7½ tons, rose ultimately, as the blast was increased in pressure and temperature by the introduction of steam blowing-engines and hot-blast stoves, to a maximum of about 30 tons. This furnace continued to work, with few interruptions, until 1837, when it was pulled down, and another, named, in honor of a former director of the works, the Schultze furnace, was built on the same site. This new furnace was about 52 feet high, 14·5 feet wide in the boshes, and 3 feet in the hearth, with rather more than 4,000 cubic feet in capacity, and produced an average of 55 tons weekly, with a consumption of coke equal to 195 per cent. of the weight of the iron run, instead of the 261 per cent. required in the old furnace. This improvement, however, was not sufficient to keep pace with the requirements of the foundry, which amounted to 4,000 tons per annum, so that a second furnace, named after the great German metallurgist Karsten, was built and blown in during 1835. A new blowing-engine, of 150 HP., was added in 1839, the former one, of 86 HP., not being sufficient to blow the two furnaces. This proved to be an unfortunate step, as

the position of the works, being at a distance from both fuel and iron ores—the site having been originally determined by the possession of a small water power, which was soon found to be insufficient to work the blowing-engines—led to a difficulty in maintaining the production; and in 1857, with the great rise in the prices of materials, wages, and transport, an unfavorable condition of things set in, which led to the entire stoppage of the works two years later. In order to obtain a profit on working, it has been necessary to give up the production of foundry iron entirely, and to produce only a white forge iron as cheaply as possible, using an inferior local ironstone and forge cinder. For this purpose the Karsten furnace has been reconstructed on the plan advocated by Herr BÜRGENBACH, of Neuss. The old massive casing wall was removed, leaving only four pillars and arches reaching to the height of the top of the boshes, within which the furnace stack is built of a double thickness of firebrick, together about 36 inches, on the lower cylindrical part, up to the top of the boshes, and tapering upwards to 30 inches at the throat. Experiments were made with a view to determine whether the use of a thin stack wall, without an exterior casing, was attended with any considerable loss of heat. For this purpose the space of 18 inches between the remaining part of the former casing wall and the new wall at the level of the boshes was first left open, in order to promote a free circulation of air around the hottest part of the furnace, and was then filled with coke breeze to prevent the transmission of heat by the use of a non-conducting envelope. It did not, however, appear that, for a similar constitution of charge, there was the slightest difference in the consumption of fuel in favor of the jacketed over the uncovered wall; and even under the latter condition a saving of fuel has been effected as compared with the former. The charging platform is carried on iron columns, which, however, are not, as in the Bütgenbach furnace, used as gas conduits, the gases being collected by a central tube in connection with Langen's arrangement for closing the top of the furnace, in which the charging funnel is of the full size of the throat, and the stopper is formed by a cylinder with a conical edge, movable like a telescope on the central gas tube, and made gas-tight with water. The ordinary cup and cone charger was first tried, but did not prove advantageous in practice. The Langen charger works well with a wide throat, but requires to be used with very large supplies of fuel. By increasing the charge of coke from 50 cwt. to 84 cwt., the consumption was reduced from 33 cwt. to 24 cwt. per ton of forge iron, and the daily make rose to 50 tons. The gases are used both for heating the blast and for firing the twelve boilers of the blowing engines. The stack is bound with iron hoops in the proportion of one to every two rings of brickwork. The principal dimensions of the furnace are approximately as follows:

Total height	47·5	feet.
Width of boshes	17·5	"
Width of hearth	8·3	"
Width of throat	12·75	"
Depth of hearth	3·166	"
Capacity	7,430	cubic feet.

The tuyeres are eight in number, each of 2·75 inches diameter, and the pressure of the blast is about 2·75 lb. at a temperature of about 700° Fahr. The slags are run through a Lürmann slag water-tuyere. The materials smelted are principally brown iron ores of Tarnowitz, containing about 27 per cent. of iron and from 2 to 5 per cent. of manganese, besides about 1 per cent. of zinc, and some lead and forge and mill cinders from the various ironworks in Upper Silesia, which average about 50 per cent. of iron and 2 to 2½ per cent. of phosphorus. Latterly Hungarian spathic ores of high quality have been used for mixing; they are brought from a distance by railway, and contain, when calcined, about 50 per cent. of iron, at a cost of about 27s. per ton. Under the most economical condition of working, the charge consists of—

250 lb.	brown iron ore containing	28	per cent. of iron.
380 "	forge cinder "	50	" "
135 "	calcined spathic ore "	40	" "
135 "	raw spathic ore "	50	" "
300 "	limestone.		
466 "	coke (ash varying from 5 to 15 per cent.)		

These quantities correspond to a produce of 42·3 per cent. of pig iron, with a consumption of 24·5 cwt. of coke and 15·75 cwt. of limestone per ton of pig iron. The average daily production is about 42 tons, but as many as 50 tons have been run in a day. In June, 1874, the consumption of coke was as low as 21·6 cwt. per ton of iron. It is sought to produce as much as possible the class of metal known as *spiegelig* or *weiss-strahlig*, that is, a white crystalline pig somewhat resembling refined iron, containing about 2·5 to 3 per cent. of carbon, and under 1 per cent. of silicon, which is valuable for making fibrous iron, owing to the rapidity with which it "comes to nature," and the high yield, due to the small amount of silicon present. The quantity of phosphorus in the puddling furnace is considerable, as might be expected from the large amount of cinder used, and varies from about 1 to 1·4 per cent. The effect of this is in part compensated by the manganese (2·5 to 4 per cent.) derived from the brown and spathic ores used. The proportion of cinder to ore in the charge may be as high as 55 per cent., but this is an extreme limit; about 40 per cent. yielding the best results. The width of the hearth seems to influence the production of spiegel-like iron; thus it could not be made in the Schultze furnace when first blown in, the hearth being only 5 feet wide; but afterwards, when the diameter was increased by the burning out of the lining to nearly 7 feet, this class of iron was produced regularly. The large amount of zinc and lead in the local ores gives rise to certain peculiarities in the working. For the purpose of collecting the latter metal, passages known as lead channels, which are kept heated by a fire, are cut in the masonry underneath the hearth, so that the lead working through the joints of the bricks may be collected and ladled out. Formerly, when ore rich in lead was more used than at present, as many as 12·5 tons of lead, with about 25 oz. of silver to the ton, worth about £300, were sometimes obtained in a month; but such ore contains the least iron, and is now avoided, owing to the extra expenditure of fuel required for its reduction. Hot blast is more favorable to the saving of lead than cold blast, from the lower temperature in that case prevailing in the higher parts of the furnace reducing the loss from volatilization. In like manner more lead is obtained when the furnace is running white iron than when it is working hotter, and producing grey metal. The zinc in the ore escapes partly in the form of spongy masses of oxide, containing 47·5 per cent. of zinc, but principally as flue deposit, consisting of dust from the ore and flux, mixed with oxides of lead and zinc, and containing from 12 to 14 per cent. of lead, and about 20 per cent. of zinc. This is collected in part in the glass tubes and in special washing boxes, as well as in the boiler and stove flues. The amount of this deposit obtained monthly is about 8·5 tons, containing nearly 2 tons of zinc; but as the ore charged into the furnace during this time is estimated to contain about 9·25 tons of zinc, it would appear that of the total amount in the ore only 21·7 per cent. can be collected, 78·3 per cent. escaping up the chimney.

The use of the slag tuyere is attended with a great saving of time. After tapping, the tuyere is stopped until the slag rises again, which usually happens in about three hours. It is then opened, and the current of cinder is allowed to flow continuously until the next tapping time. The actual stoppage of the furnace is reduced to twenty-four minutes per day, as against one and a half hour, which was required before the system of continuous slag-running was adopted.

H. B.

Selected List of Patents for the Week ending Oct. 2, 1875.

RELATING TO MINING, METALLURGY, GAS MAKING, ENGINEERING, ETC.

Reported for the "ENGINEERING AND MINING JOURNAL" by LOUIS BAGGER & Co., Counsellors at Patent Law, Washington, D. C.

No. 167,795. *Gas Governors*, WM. D. SNOW, Brooklyn, N. Y.

A hollow valve is carried by a tubular stem attached to the float, and projecting upward to admit the insertion of shot, whereby the center of gravity of the valve and float is kept as low as possible. The siphon trap prevents the entrance of condensed material into the governor.

No. 167,606. *Rotary Valves for Dip Pipes*, WM. FARMER, New York City.

The rotary valve, having a central partition, forms the top of the dip-pipe, which has also a central partition. One-half of the pipe extends into the sealing-liquid in the hydraulic main, and the other half opens above the liquid. The valve operates to open communication with either side, or to close the passage between the retort and the short side of the dip-pipe.

No. 167,625. *Ore-Feeders*, CHARLES P. STANFORD, San Francisco, Cal.

This consists of a stationary hopper connected with a movable mouth-piece or chute, the bottoms of both are formed on the arc of a circle, whose center is at the pivot upon which the chute works. The chute moves backward like a sleeve over the mouth of the hopper, and discharges a portion of ore at each blow of the stamp-stem.

No. 167,638. *Ore Crushers and Amalgamators*, CHAS. BRAIDS, Copperopolis, Cal.

The ore is fed into a circular trough in which it is crushed by two heavy rollers. Between the rollers are two drags, for the purpose of stirring and completing crushing of the mass of ore.

No. 167,630. *Blank-Feeding Attachments for Swaging Machines*, R. THOMPSON, Bridgeport, Conn.

The blank is forced through the spindle into the griping-chuck, and out by a stationary plunger, as the slide, carrying hopper, spindle, etc., travels back and forth. The blank is held to the dies for swaging by a stop and spring within the chuck. The jaws of the chuck are opened and closed by means of a forked sliding bar, which is connected to a rocking shaft on the slide, which shaft is rocked by a lever riding upon an adjustable bar, on either side of the frame.

No. 167,665. *Furnace-door Casings*, HENRY F. HAYDEN, Washington, D. C.

Air-ducts controlled by valves are formed in the bottom and sides of the door casing, for admitting currents of air to the combustion chamber at the front and sides of the fire.

No. 167,626. *Tools for Selling Tubes in Artesian Wells*, J. B. STELLWAGEN, Frankfurt, Ill.

This consists of a bar and rods, forming a cage with a conical lower end, and a combination therewith of yokes, levers and toggles, a trip rod and trip line.

No. 167,738. *Spark Arresters*, ROBERT BRAYTON, Freemont, Ohio.

In this device, the sparks and cinders, passing out of the uptake, are deflected, and extinguished in a water reservoir located therein.

No. 167,719. *Colliery Plant*, R. A. WILDER, Cressona, Pa.

The coal is dumped into the chutes and delivered to a platform where it is washed by water from pipes or nozzles, the water and fine dirt escaping through the screen. The lumps, which are not to be broken, are thrown by hand upon the side conveyers, and carried directly to the loading chute. The remainder is thrown upon the conveyers in front of the platform and carried to the breakers, from which it falls upon the next conveyer, on each side of which the pickers are seated to cull the waste by hand, and is finally delivered by an elevator to the loading chute.

The "American Manufacturer" of Pittsburgh has been lubricating the wheels of progress, by absorbing the *National Oil Journal*.

STATISTICS OF COAL PRODUCTION.

This is the only Report published that gives full and accurate returns of the production of our Anthracite mines.

Comparative Statement for the week ending Oct. 2:

	1875.		1874.	
	Week.	Year.*	Week.	Year.
Wyoming Region.				
D. and H. Canal Co	52,619	2,341,155	48,839	1,731,286
D. L. and W. RR. Co	58,964	2,571,429	58,423	1,847,433
Penn. Coal Co	29,333	1,018,513	30,313	998,112
L. V. RR. Co	21,341	703,631	14,684	718,018
P. and N. Y. RR. Co	989	79,292	994	45,958
C. RR. of N. J	42,505	928,558	43,635	1,061,580
Penn. Canal	12,640	199,875	6,463	252,309
Lack. and B. RR.	..	81,493	..	112,529
	218,392	7,923,946	203,351	6,817,225
Lehigh Region.				
L. V. RR. Co	92,112	1,285,102	42,215	2,367,983
C. RR. of N. J	30,343	417,652	35,032	853,125
D. H. and W. B. RR.	2,561	58,067	444	30,751
	125,016	1,761,121	77,691	3,251,859
Schuylkill Region.				
L. and R. R. RR. Co	176,534	3,087,155	175,730	3,724,995
Shamokin & Lykens Val.	25,331	912,515	25,595	695,387
	201,865	3,999,670	201,325	4,420,382
Sullivan Region.				
Sul. and Erie RR. Co	..	5,557	410	28,399
Total	545,273	13,690,294	482,777	14,517,865
Increase	62,496	..	..	..
Decrease	..	827,571	..	..

* Year beginning January 1st.

The above table does not include the amount of coal consumed and sold at the mines, which is about seven per cent. of the whole production.]

The Production of Bituminous Coal for the week ending Oct. 2, was as follows:

Tons of 2,000 lb., except where otherwise designated.

Cumberland Region, Md.	Week, Tons.	Year, Tons.
Tons of 2,240 lb	56,344	1,761,790
Barclay Region, Pa.		
Barclay RR., tons of 2240 lb	8,015	242,992
Broad Top Region, Pa.		
Huntingdon and Broad Top RR	4,006	160,849
*East Broad Top	782	33,371
Clearfield Region, Pa.		
*Snow Shoe	951	47,486
*Tyrone and Clearfield	23,152	621,521
Allegheny Region, Pa.		
*Pennsylvania RR	3,185	163,166
Pittsburgh Region, Pa.		
*West Penn. RR	4,804	156,980
*Southwest Penn. RR	1,501	13,750
*Penn. & Westmoreland gas coal, Pa. RR.	18,182	492,879
*Pennsylvania RR	12,020	327,798
Kanawha Region, W. Va.		
†Chesapeake and Ohio RR	4,692	125,519

* To Sept. 21. † To Sept. 25

The Production of Coke for the week ending Sept. 21.

Tons of 2000 lb.	Week. Tons.	Year. Tons.
Tyrone and Clearfield	..	273
Alleghany Region	..	53
West Penn. RR	713	36,082
Southwest Penn. RR	6,667	382,877
Penn. & Westmoreland Region, Penn. RR.	1,121	24,025
Pittsburgh, Penn. RR	228	74,214
Total	8,729	518,424

The receipts at Port Richmond for the week were 80,000 tons, shipments 70,000 tons, and balance on hand 160,000 tons.

The decrease of shipments of Cumberland Coal over the Cumberland Branch, and Cumberland and Pennsylvania Railroads amounts to 54,c32 tons.

The Exports of Coal from Baltimore for the week were 1564 tons, and for the year, 32,225 tons as compared with 61,787 tons to the corresponding time in 1874.

Receip's of coal at Boston, for week ending Oct. 1, and years from September 1st, 1874 and 1875.

From	Week. Tons.	1875. Tons.	1874. Tons.
Alexandria and Georgetown	3,424	12,933	22,950
Philadelphia	26,175	77,199	63,745
Baltimore	5,448	16,952	26,441
Other places	15,470	28,367	31,666
Great Britain	—	604	915
Nova Scotia	1,268	3,868	7 717

Shipments from Pictou, N. S., for the week ending Sept. 25:

	Tons. Week.	Year.
To United States	1,711	19,640
" West Indies	511	1,618
" South America	—	1,002
" anada	3,420	117.405
" Other Provinces	3,353	46,957
	8,995	186,622

Belvidere Delaware RR. report:	Week.	Year 1875.	Year 1874.
The receipts of coal at Coal Port (Tr'ton)	11 437	113,130	210 c93
" " " South Amboy	9,848	171,686	475,915
Shipments of Coal Port (Trenton)	9,436	108,343	209,999
" South Amboy	13.278	226,691	481,286

Shipments from the Block House, Cow Bay, C. B., to the following destinations, from Aug. 31 to Sept. 6, 1875:

	Week.	Year.
Provinces	541	5,475
West Indies	—	806
United States	1,394	7,525
	1,935	13,806

COAL TRADE REVIEW.

Duties.

Anthracite free, *Bituminous*, per ton of 28 bushels, 80 lb. to the bushel, 75c., gold.

All *slack*, or *culm*, such as will pass through a half-inch screen, per ton of 28 bushels, 80 lb. per bushel, 40c. gold.

Not otherwise provided for, per ton, 40c. gold.

NEW YORK, Friday Evening, Oct. 8, 1875.

Anthracite.

A good demand continues for domestic sizes of Lehigh coal, but other descriptions of coals are in very quiet demand. Prices are maintained by the large companies, but we hear of considerable underselling of their coal by contractors and others. We have heard of no further sales of stock and condemned coal, and the sales by the Reading Company of condemned chestnut, of which we made mention last week, are reported to have amounted in total to not over 20,000 tons. Contrary to expectation, the stock of coal at Port Richmond last Saturday showed an increase of 10,000 tons, making the total 160,000 tons. The Delaware and Hudson Canal Company have in stock at Rondout over 100,000 tons, and the Delaware, Lackawanna and Western Company have large supplies at Hoboken. The indications are that the companies will be in as good, if not in a better, position, as regards stocks of coal, to make a demand upon the miners for a reduction of wages, should such a course be decided on, than they were at the beginning of the year. The programme for next year's business is already being informally dicussed, and oppesition to the views of some of the members is apparent. This must be the case under all circumstances, owing to the different qualities of coal mined by the various companies, and the geegraphical position of the several shipping ports. As the condition of business may lead to the adoption of an entirely different programme from what appears probable at this time, we shall await the approach of the next season's business before discussing this subject more fully.

The Production of athracite coal for the week ending October 2, was 545,273 tons, and from January 1, 13,690,294 tons. The production for the corresponding week of 1874 was 482,777 tons, and from January 1, 1874, 14,517,865 tons. The production for the week ending September 25, 1875, was 548,741 tons. From the above figures it will be seen that there was a decrease in production of last week, as compared with the previous week, of 3,468 tons, and an increase of 62,496 tons, as compared with the corresponding week of 1874. There has been a decrease since January 1, as compared with the corresponding period of 1874, of 827,571 tons. The Delaware, Lackawanna and Western, and the Delaware and Hudson Canal Companies, have stopped shipments to tide water for two weeks, beginning with the 1st inst. They are sending to the Northern and Western trades as much coal as they will take, but are, neve.theless, compelled to stop some of their collieries.

Bituminous.

The improved demand for bituminous coal, noticed heretofore, is still maintained, although the orders received, while aggregating fairly, are mostly in a small way. Prices are still low, and competition as great as the size of the orders should warrant. The output of Cumberland coal was not so great last week as the previous one, although in excess of the corresponding week of last year. The Pennsylvania companies are fairly maintaining their output, although complaining of the prices which they are receiving.

The following is a comparison of the total business done by the Cumberland and Pennsylvania Railroad and the Cumberland Branch Railroad, from January 1st to October 2nd, 1874 and 1875.

Delivered to	1874. Tons.	1875. Tons.	1875. Increase Tons.	1875. Decrease Tons.
Chesapeake & Ohio Canal	605,077	669,613	64,536	....
Baltimore & Ohio R.R	1,070,016	887,858	....	182,158
Penn. State line.	59,535	123,125	63,590	
Total	1,734,628	1,680,596		54,032

Although the total Cumberland business has fallen off about 3 per cent., yet it will be observed that the shipments to the Chesapeake and Ohio Canal have increased —owing to the liberal policy of the Canal Company—over 10½ per cent., and the shipments to the Pennsylvania State Line over 106 per cent., while the shipments via the Baltimore and Ohio Railroad have fallen off over 17 per cent. We made mention last week of an experimental steam canal-boat having been placed upon the canal. We are now informed that a second one has been completed and is being tried, and that a third is to be built, from which we infer that the first two are a success. It is expected that the cost of transportation by canal will be greatly reduced by this improvement, in which case the Baltimore and Ohio Railroad Company will have to make a large reduction in freights to secure any considerable amount of the business next year.

Foreign and Gas Coals.—There has been an arrival of 500 tons of Newcastle gas coal on ship's account, which is reported to have been sold at a very low figure, not netting cost and freight. Domestic gas coals are being actively delivered on contracts. The only feature of note in this department is that the Pennsylvania Gas Coal Company are making shipments from Baltimore, shipping over their new branch via the Connellsville and Baltimore and Ohio Railroads.

Freights.

Freights from Baltimore and Georgetown are not quite so strong as last week. From Philadelphia they are a little more firm, in sympathy with this market. The combination among ship brokers in this city, to advance freights, is but a partial success, many of the most prominent houses having refused to enter into the agreement. It has, however, been of sufficient importance to maintain pretty high rates of freight, and cause much trouble to the large companies, who have combined to pay but $1 30 to Boston. From present appearances, the combination of brokers is not likely to become a permanent success.

Philadelphia Coal Trade.

PHILADELPHIA, Oct. 7, 1875.

Vessels, which have been scarce during the end of last week, have continued so, and freights are considerably stiffer to the East. $1 60 to Boston may be called the lowest rate, 5c. and 10c. over that rate being offered in some instances, and the general impression is that $1 75 will be the regular rate before long. The stocks of coal at shipping points, which were already large, have increased steadily, and may be said to be the largest which have ever been accumulated at Port Richmond Everyone looks for an earlier winding up of the trade of the Schuylkill Region than usual, October having always been from time immemorial the busiest month of the year. Although orders have accumulated and a good sized fleet could be accommodated, they are not so plenty as they should be, and not sufficient to take more than the regular production, if equal to that. The Lehigh Region is exceedingly busy, and with a large number of orders ahead. It is reported that eight furnaces belonging to parties owned by the Reading Coal and Iron Company are either in blast or preparing to go in blast under the "Iron Clad" agreement, and that the proposition of the company to owners and other furnaces has been withdrawn.

Wholesale Prices of Anthracite Coal for Oct. f.o.b. at the Tide Water Shipping Ports per ton of 2240 lb.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Wyoming Coals.						
*Lackawanna and Scranton at Rondout and Hoboken	5 05	5 15	5 25	5 65	6 10	4 95
‡Pittston at Newburgh	5 05	5 05	5 15	5 40	5 90	4 85
Wilkesbarre at Port Johnston	5 05	5 15	5 25	5 65	6 10	4 95
Plymouth, R. A., *Net*	....	....	5 25	5 65	6 10	4 95
Susque. Coal Co. at Amboy W.A.	5 05	5 15	5 25	5 65	6 10	4 95
Kingston at Hoboken	5 05	5 15	5 25	5 65	6 10	4 95
Lehigh Coals.						
Old Company at Port Johnston	5 55	....	5 55	5 65	6 10	5 10
Old Company's Room Run "	5 55	....	5 55	5 65	6 10	5 10
§Sugar Loaf, Hobok. &Amb."	5 55	....	5 55	5 65	6 10	5 10
Lehigh Coal Exchange "	5 55	....	5 55	5 65	6 10	5 10
Honey Brook Lehigh	5 35	....	5 55	5 65	6 10	5 10
Spring Mt. C. Co. at Hoboken	....	....	....	....	....	....
Beaver Meadow at South Amboy	5 55	....	5 55	5 65	6 10	5 10
†Schuylkill Coals at Port Richmond.						
Schuylkill white ash	4 55	4 65	4 75	5 15	5 60	4 45
Schuylkill red ash	....	....	5 05	5 25	5 65	4 45
Shamokin white and red ash	....	....	....	5 40	5 20	4 50
Lorberry	....	....	5 90	5 90	5 90	4 65
Lykens Valley	....	....	6 50	6 50	6 50	5 50

Per ton.

Freight from Hoboken and Weehawken to New York .... 40c.
" " Elizabethport & Port Johnston to N. York. 45c.
" " South Amboy to New York ..... 50c.

*Freight on Lackawanna coal from Rondout to New York, by boats or barges of the D. and H. Canal Co. 50c. per ton, the expense of towing vessels from New York harbor to Rondout and back will be borne by the Company.

†Freight from Port Richmond to New York (free of discharging) 85c. per ton.

‡ Prices to the Trade.

§ By Canal at New York, Jersey City and Brooklyn, 30c additional alongside.

Schuylkill coal is delivered f.o.b. of boats in New York harbor at 50c. per ton additional to these rates.

Pittston coal is delivered to carts in New York or Brooklyn at 65 cents per ton in addition to the above rates.

Wholesale Prices of Bituminous Coal.

Domestic Gas Coals.

Per ton of 2240 lb.	At the Shipping Ports.	Alongside in New York.
Westmoreland and Penn. at Greenwich, Philadelphia	$5 20	$6 50
" " at S. Amboy	6 00	6 50
Red Bank Cannel Pa. at Philadelphia	8 00	8 50
" " South Amboy	8 50	....
" Orrel	6 00	6 50
Youghiogheny, Waverly Co., at Balt	5 00	6 50
Despard, West Va.,	5 00	6 50
Murphy Run, West Va., at Baltimore	4 75	6 50
Fairmount, West Va., " "	4 75	6 50
Newburgh Orrel, Md. " "	4 75	6 50
Cannelton Cannel, W. Va., at Richmond.	9 50	11 00
" Splint, " "	5 00	6 50
Peytona Cannel, " "	9 50	11 50
Straitsville " at Sandusky, O	3 25	10 00

Foreign Gas Coals.

	Sterling.	Am. cur'cy,
Newcastle, at Newcastle-on-Tyne	10/6@12/9	6 50@ 7 00
Liverpool House Orrel, at Liverpool	26/	13 00
Ince Hall Cannel "	47/	18 00@20 00
" Gas Cannel "	32/ 6d	13@14
Scotch Gas Cannel, at Glasgow, nominal,	25/	7 50
	Gold.	
Block House, at Cow Bay, N. S	2 00	5 50
Caledonia, at Port Caledonia	1 75	5 25
Glace Bay, at Glace Bay	1 80	5 50
Lingan, at Lingan Bay	75	....
Sydney, International and Reserve mines, at Sydney	2 00	5 50
Pictou, Albion & Vale mines, at Pictou.	2 25	5 75

Steam and House Coals.

Broad Top, at the mine, $1 25; at Amboy	4 75@5 00	5 25@5 50
Cumberland, at Georgetown and Alexandria, Va	4 00@4 25	5 25@5 50
Cumberland, at Baltimore	4 25@4 35	5 75@6 00
Clearfield and Allegheny, "Derby," "Kittanning," "Sterling," "Sonman," and "Eureka," at the mines, $1 00; at Greenwich, Phil	4 65	5 65

Prices of Lackawanna, Plymouth and Shamokin Coal, for the Month of September, at various points.

Afloat, per ton of 2000 lb. delivered at	Elmira.	Watkins.	Ithaca.	* Syracuse.	† Oswego.	† Rochester.	‡‡ Buffalo.
Grate	4 50	4 80	4 80	4 95	5 90	5 65	5 90
Egg	4 50	4 80	4 80	4 95	5 90	5 65	5 90
Stove	4 90	5 25	5 25	5 40	6 35	6 10	6 35
Nut	4 65	5 00	5 00	5 15	6 10	5 85	6 10

† Coal is delivered to retail consumers at these points for $1.25 per ton additional to these rates.

* At this point 70c. per ton additional is charged to retail consumers.

‡ At this point 50c. per ton additional is charged to retail consumers.

Retail Prices in New York.

Anthracite.

Per 2000 lb.	Grate and Egg.	Stove.	Chestnut.
Pittston coal, in yard	$6 20	$6 40	$5 60
Lackawanna coal, delivered	6 75	7 00	6 25
Wilkes-Barre, "	7 00	7 25	6 75
Lehigh & Locust Mountain, del'd	7 00	7 50	6 50
Schuylkill Red Ash, del'd	7 00	7 50	

The Cost of delivering Pittston coal ranges from 40 cts. to $1 per ton, according to distance from the yard.

Williamsburgh, N. Y.
Lackawanna Coal at Yard.

Stove	$6 40
Egg	5 90
Chestnut	5 40

Bituminous.

Liverpool House Orrel, delivered, per ton of 2000 lb	$23 00
Liverpool House Cannel " " "	25 00
American " " " "	16 00
American Orrel " " "	11 00
Red Bank Cannel " " "	14 00
Cumberland " " "	7 00

Baltimore, Md. Oct. 2, 1875.

Reported by our Special Correspondent.

ANTHRACITE.

Wholesale or Trade Prices per 2240 lb.

Wilkes-Barre "Lee" or "Diamond," Pittston and Plymouth. White ash.	In cars at depot.	By boats afloat.
Lump and steamboat	$4 80	$4 65
Broken	5 46	5 31
Egg	5 77	5 62
Stove	6 02	5 87
Nut	4 90	4 87
Shamokin, (red or white ash), and "Boston," freeburning white ash,		
Egg	5 80	5 62
Stove	6 00	5 87
Lykens Valley, red ash,		
All sizes	6 30	9 12

From wharf or yard, wholesale, 50@75c. additional.
By retail, all kinds and sizes, per 2240 lb. $7 00@8 00.

BITUMINOUS.

George's Creek and Cumberland f. o. b. at Locust Point	4 15 4 50
West Virginia f. o. b. at Locust Point	5 50
Youghiogheny Gas, f. o. b. at Locust Point	5 50
Swanton Coal, George's Creek	4 40

Boston. Oct. 4, 1875.

Reported by our Special Correspondent.

CARGO PRICES TO TRADE.

Lingan coal	$ 5 20	Westmoreland and Penn.	6 85
Caledonia	5 00	Waverly Co. Youghiogh'y.	6 80
Pictou	5 60	Cannelton Cannel	11 60
Block House	5 20	Cumberland	5 80@ 6 00
Red Bank Cannel	9 00	Anthracite	6 50@ 7 25
Glace Bay	5 00	" retail	7 50@ 8 00
Sydney	6 25		

Buffalo, N. Y. Oct. 6, 1875.

Reported by our Special Correspondent.

Freights to Chicago and Milwaukee $1—with vessels scarce. Quotations are as follows:

ANTHRACITE.

	Afloat. f.o.b.	Retail, Deliv'd.
Grate	$6 40	$7 40
Egg	6 40	7 40
Stove	6 85	7 85
Nut	6 60	7 60

	Lump.	Run of Mine.	Nut.	Slack.	Nut & Slack.
Connellsville Coke	$5 50	....	....	....	....
Brookfield Coal	....	....	....	....	....
Briar Hill	4 50	....	....	....	3 00
Youghiogheny	4 75	....	....	....	....
Monterey	3 75	3 50	3 25	2 50	....
Catfish	3 75	3 50	3 25	2 50	....
Stoneboro	....	....	3 25	2 50	....
Sterling Cannel	5 50	....	....	....	....
Buffalo Coal Co.	3 50	3 25	....	2 30	....

Chicago, Ill. Oct. 5, 1875.

Specially reported by Messrs. RENO & LITTLE, Coal Merchants.
Retail prices per ton of 2000 lb. delivered to buyer.

No change in prices of coal—stocks ample and sales not very heavy.

Lehigh Lump	$10 00	Briar Hill and Erie	@ 7 00
Lehigh grate and egg	10 00	Walnut Hill, Pa	@ 6 00
Lehigh stove and chest.	10 50	Midway, Pa	@ 6 00
Lackawanna, Wilkes-Barre and Pittston*		Cannel	@ 9 00
		Blossburg	8 00
Grate and egg	9 00	Indiana Block	5 50
Stove and chestnut	9 50	Hocking "Brooks"	6 00
		Wilmington and Illinois.	4 50

BITUMINOUS.

* 50 cents off these prices for car load lots to country dealers and manufacturers.

Cincinnati, O. Oct. 2, 1875.

Reported by our Special Correspondents.

Prices of coal:

Per ton of 2000 lb.	Bush.	Ton.
Youghiogheny, or Pittsburgh, afloat	10 c.	——
Pomeroy coal	6½c.	——
Cannel coal, according to quality	11@16	——
Semi-Cannel	9c	——
The following are the retail prices delivered		
Youghiogheny	—c.	
Pomeroy	—c.	09
Cannel	—c.	5 50
Kanawha Semi-Cannel	—c.	3 25
Anthracite	9 50@10	
Foundry coke	—	——
Coke, hard and soft	10c.	——

Cleveland O. Oct. 2, 1875.

No change of prices.

WHOLESALE.

Per ton of 2000 lb. f. o. b. vessels.

	For vessels,	On cars.
Youghiogheny Gas Coal	$4 40	$4 15
Cannel	4 50	4 15
Blossburgh	5 00	5 00
Briar Hill Block Coal	3 80	3 60
Hocking Valley	3 25	3 10
Straitsville Coal Co., lower vein	3 25	3 10
Mineral Ridge	3 10	3 25
Massillon	3 10	3 30
Tuscarawas Valley	2 85	2 70
Columbiana	2 80	2 60

RETAIL DELIVERED.

	Lump.	Nut.
Briar Hill	$5 00	$3 50
Massillon	4 50	4 00
Mineral Ridge	4 50	4 00
Columbiana	3 25	3 00
Stillwater	3 25	3 00
Tuscarawas Valley	3 25	3 00

ANTHRACITE DELIVERED.

	Grate.	Egg.	Stove.	Chestnut.
Lehigh	$9 00	$9 00	$9 50	$9 25
Wilkes-Barre	7 85	7 85	8 35	8 10
Lackawanna	7 85	7 85	8 35	8 10

—*Manufacturing and Trade Review.*

Detroit, Mich. Oct. 2, 1875.

Specially reported by Messrs. ROBINSON & KEYS, Dealers in all kinds of coal.

Per ton of 2000 lb.

Lehigh Lump, per ton	$10 50	Blossburg	8 50
Lehigh " prep.sizes.	10 00	Briar Hill	7 50
Wilkes-Barre, Grate and Egg	9 00	Willow Bank	7 00
		Erie	7 50
Wilkes-Barre, Stove and Nut	9 50	Massillon	7 00

Erie, Pa. Oct. 2, 1875.

Reported by our Special Correspondent.

Wholesale, per ton of 2000 lb. Bituminous f. o. b.

Briar Hill lump	$3 75	Beaver lump	$3 50
Midway	3 25	Cat Fish	3 00

Indianapolis, Ind. Oct. 2, 1875.

Specially reported by Messrs. COBB & BRANHAM.

Prices unchanged.

Louisville, Ky. Oct. 5, 1875.

Specially reported by Messrs. BYRNE & SPEED.

The price of coal advanced yesterday one cent per bushel.

The demand is quite active, all of the dealers having as much as they can do.

WHOLESALE.

	per bushel		per bushel
Pittsburgh	10c	Pine Hill	—
Raymond City	9c.	Kentucky	—

RETAIL.

	per bushel		per bushel
Pittsburgh	14c.	Peytona Cannel	20@22c.
Raymond City	13c.	Buckeye "	—
Pine Hill	13c.	City-made Coke	11c.
Kentucky	12c.	Auth., per ton, $10 00 to 10 50	
Screened Pittsburgh per load			$3 00
Screened Raymond City			2 75
Pine Hill (Kentucky)			2 75
Cannel			$5 to 5 50

Milwaukee, Wis. Oct. 2, 1875.

Specially reported by Messrs. R. P. ELMORE & Co.

Retail price per ton of 2000 lb.

Lehigh Lump	$10 00	Briar Hill, select	$8 00
Lehigh Prepared	11 00	Blossburgh	8 00
Lackawanna (all sizes)	10 00	Cannel	8 00
Pittston	10 00	Pittsburgh	7 00
Scranton	10 00	Steam coal	5 00

New Orleans, La. Oct. 2, 1875.

Specially reported by Messrs. P. & R. DE VERGES, Wholesale and Retail Dealers in Pittsburgh, Anthracite, Cannel and other Coals.

Large stock, with very little demand for the season.

Our market has again gone down at wholesale. We quote:

Pittsburgh coal, retail, per bbl	60c.
" wholesale	35c.
" steamboats, per box	50c.
" to manufacturers, per bbl	55c.
" shipments, per hhd	....
Anthracite, wholesale, per ton	....
" retail, "	....
Virginia Cannel, per bbl	80c.
Scotch " "	....
Mt. Carbon, wholesale, per bbl	35c.
" " retail, "	55c.
St. Bernard, wholesale, per bbl	....
" retail, "	....

Pittsburgh, Pa. Oct. 6, 1875.

COAL.—The coal trade, so far as Pittsburgh is concerned, continues sluggish and unsatisfactory, and with a prospect of a strike by the miners along the line of the Panhandle road, the outlook is not very encouraging. Prices are nominally unchanged, and the demand is not as brisk as it should be at this season of the year. Lump coal, that is for round lots, is quoted at 5½@6 cents per bushel, delivered free on cars in Pittsburgh, and nut coal about one cent per bushel less. As navigation continues suspended there is no movement in coal by river; however, it is encouraging to learn that prices are improving in some of the down-river markets. At Cincinnati, the stock afloat is about exhausted, and the price advanced to 9½@10 cents.

COKE.—The coke trade continues substantially as noted in our last report; while trade is about all that can be expected, it is far from being satisfactory, and no decided improvement can be expected until there has been a revival in the pig iron trade, as the two interests are closely identified, and the one must of necessity sympathize with the other. Prices unchanged; $2.50@2.75 per ton delivered free on cars in Pittsburgh.—*American Manufacturer.*

Richmond, Va. Oct. 2, 1875.

Specially reported by S. H. HAWES, Dealer in Coal.

Per ton of 2240 lb., f.o.b.

Kanawha Cannel	$12 00	New River Bituminous,	$4 50
" semi-Cannel	4 75	Clover Hill Coal	4 25
Coalburgh Splint	4 90	James River Bitum	3 30
Lewiston "	4 90	" " Carbonite,	5 80
Kanawha Gas coal	4 50		

San Francisco.

From the *Commercial Herald*, Sept. 23, 1875.

Imports from January 1st to Sept. 16:

Anthracite tons	7,667	English, tons	38,001
Australian, tons	90,317	Vancouver Island, tons	46,075
Coos Bay, tons	25,672	Rocky Mountain, tons	42
Cumberland, tons	6,703	Seattle, tons	42,545
Mt. Diablo, tons (8 mos)	99,356	Bellingham Bay, tons	8,545

The receipts of anthracite are light by recent arrivals, while those of bituminous continue excessive. A greater proportion than usual from Sydney and Newcastle, N. S. W., is of new or outside mines, and of inferior quality, while of Wallsend, No. 1, supplies are light—price, of the latter are maintained, while of inferior parcels, cargo lots are hard to place at even $8, ex ship, and some parties are compelled in self-defence to job out whole cargoes in order to save their owners from total loss. Imports for the week embrace the following cars goes: *Talisman*, from Sydney, 1,698 tons; *Gen. Butler* from Liverpool, 1,669 tons; *Harvest Home*, 800 tons Seattle; *Black Eagle*, Wellington, 1,985 tons; *Salvador*, 400 tons do.; *Canada*, 1,677 tons New South Wales. The receipts from Vancouver's Island and the North Coast are steadily increasing, and it is by reason of these free supplies from British Columbia, Coos Bay, Bellingham Bay and Seattle mines that the price of Australian is forced down so low as at this date. It is quite a difficult matter to quote cargo sales at present correctly, as nearly all large transactions are at a loss—prices withheld. Anthracite continues scarce and high. We quote Bellingham Bay at $8 50; Coos Bay, $10; California Mt. Diablo Steam, $6 25@8 25 for fine and coarse respectively; Cumberland, $16@18; Nanaimo, $9 50@10; Seattle, $9 25@10; Anthracite, $15@25. Lehigh jobbing at $28@30.

Halifax, N. S. Oct. 2, 1875.

The prices of coal continue unaltered. Freights averaging still about $1.30 to $1.35 per ton or $1.90 to $2 per chaldron, without any likelihood of their being any higher, at least for the present.

Prices per ton of 2240 lb. in gold.

Sydney (old mines)	$4 00	Little Glace Bay	3 35
Gowrie	3 35	Blockhouse	3 35
Victoria	——	Albion (at Railroad)	4 00

Montreal. Oct. 2, 1875.

Specially reported by Messrs. ROBERT C. ADAMS & Co.

Wholesale per ton of 2240 lb.

Scotch Steam	$4 85	Cape Breton Steam	$4 25
Pictou "	4 75	Newcastle Smiths	6 50

Anthracite at retail, per 2000 lb., delivered.

Egg	$7 50	Chestnut	7 25
Stove	8 00		

Toronto, Ont. Oct. 2, 1875.

The following are present retail prices for coal:

Per ton all sizes.

Lackawanna and Scranton	$7 00
Lehigh Lump and prepared	8 00
Blossburgh	6 50
Soft lump for grates	6 00
Soft nut	4 50

Rates of Transportation on Anthracite Coal to Tide Ports.

Lehigh and Wyoming Coals. per ton of 2240 lb.	From Penn Haven.	From Mauch Chunk.	From Hazleton**	From Upper Lehigh.	From Ashley and Sugar Notch.
To ‡ Newark, N. J., via Central Railroad of New Jersey	2 60	2 46	2 93	2 93	3 16
‡ Mauch Chunk, Pa., via Central Railroad of N. J.	14	..	56	47	71
‡ Philipsburg, N. J.	99	85	1 32	1 32	1 65
Elizabethp't, Port Johnston, Hoboken and South Amboy, N. J., shipping and wharfage 35c. add.	2 24	2 10	2 59	2 57	2 80
High Bridge, N. J.	2 40	1 95	2 80	2 54	2 72
Somerville and Raritan, N. J.	2 80	2 35	3 20	2 35	3 12
Elizabeth, Cranford, Westfield & Elizabethport, for consumption,	2 60	2 46	2 95	2 93	3 16
¶ Jersey City, N. J., and New York, via L. V. RR. and Morris Canal.	2 85	2 40	3 17	3 24	3 54
Andover, via Delaware, Lackawanna and Western RR	3 30	3 10	3 70	3 69	3 99
Trenton, Somerset Junction and Greensburg, via P. RR. Belvidere Division	2 65	2 45	3 05	3 04	3 34
Trenton, for shipment, including shipping and wharfage	2 11	1 95	2 45	2 46	2 76

From *Mauch Chunk* to *New York* (towing limits) and Jersey City† via Lehigh Valley RR. and Morris Canal... $2 37

From *Mauch Chunk* to *Philadelphia* via L. V. RR. and North Penn. RR 1 75

††From *Phillipsburg, N. J.* to *Hoboken* for shipment via Delaware. Lackawanna and Western RR., Morris and Essex Division 1 24

From *Lackawanna Junction* to **Auburn, N. Y.*, for shipment, via Southern Central R.R. in connection with Pa. and N. Y. R.R. 2 53

From *Lackawanna Junction* to ‖*Weedsport* for *Rochester and Charlotte* 2 59

From *Lackawanna Junction* to *Sterling* for *Oswego, N.Y.*.. 2 62

‖ To this point for all places between Rochester and Buffalo the rate is 2 53

* The rate to this point for Syracuse is..... 2 05

** Rates on line coal from Hazleton are 10c. per ton above these figures.

‡ The cost of unloading is to be added to these rates. No charge less than 40c. per ton will be made for any distance. Tolls from Mauch Chunk to Phillipsburg for way points will be $1 15 per ton.

§ Twenty cents per ton less when five cars at a time to one party. Provided that where the reduction makes the rate $1 a ton, or less, the rate will be $1.

¶ 20 cents per ton additional for transferring coal from boat to boat, and 30 cents per ton for reshipment of same from wharves.

† Transportation on Coal destined for re-shipment from this point is 20c. less than above rate.

†† The rate for consumption to this point is $1 80.

CANAL TOLLS, exclusive of towage, Bordentown to New Brunswick, when towed by the Company's Steam Tugs:

For Anthracite Coal..... 35c.
Bituminous and Semi-bituminous Coal... 35c.

Freights.

Per ton of 2240 lb.

Representing the latest actual charters up to Oct. 7, 1875.

PORTS.	From Philadelphia.	From Baltimore and Georgetown.	From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken.
Augusta, Me	....	2 25	....
Albany	*85	1 70	....
Amesbury, Mass	....	....	....
Bangor, Me	†1 60	2 00	1 30
Bath, Me	1 60	1 70	1 30
Baltimore	....	1 50@1 70	....
Boston, Mass	§1 60	1 70@1 75	¶130-150
Bridgeport, Ct	*85	1 50	80
Bristol, R. I	....	....	90
Cambridgeport, Mass	§1 50@1 60	....	1 30
Derby	....	1 60	....
Dighton	....	1 65	....
East Cambridge	1 60§	....	1 30&3c.
Fall River	1 30@1 35	1 50	90
Hackensack	....	....	....
Hallowell, Me	....	....	....
Hartford	1 70	2 00	1 25
Hoboken	†85	1 30	40
Hudson	....	1 65	....
Jersey City	....	1 30	40
Lynn, Mass	†1 60	....	†1 30
Middletown	....	....	1 00
Mystic	....	....	....
Newark	....	....	....
New Bedford	1 35	1 50	90
Newburyport	1 65	1 80	1 45
New Haven	*85	1 50	90
New London	1 35	1 50	85
Newport	1 35	1 45	90
New York	85†	‖1 40	40
Norfolk, Va	85	60	....
Norwalk	1 35‡	1 50	80
Norwich	1 35‡	1 65	90
Pawtucket	1 40‡	1 65	‡100
Philadelphia	....	85	....
Portland	1 55	1 70	1 30
Portsmouth, N. H	1 70	1 80	1 45
Providence	1 35	1 50	90
Petersburg, Va	....	90	....
Portsmouth, Va	....	....	....
Poughkeepsie, N. Y	*85	1 50	....
Richmond, Va	1 10	70	....
Rockport	....	....	....
Saco	2 00	....	....
Sag Harbor	....	....	1 00
Salem, Mass	1 60	1 70	1 30
Salisbury Pt., Mass	....	....	1 30
Savannah, Ga	....	1 50	....
Stamford	*85	....	90
Stonington	....	....	....
Taunton	.. .	...	1 30
Trenton, N. J	....	....	....
Troy	....	....	....
Warren, R. I	....	....	90
Washington, D. C	87½	....	....
Wareham	....	1 65	....
Weymouth	....	1 80	....
Wilmington, Del	....	85	....
Wilmington, N. C	....	1 50	....

* And discharging and towing. † And discharging.

‡ And towing. § 3c. per bridge extra.

‖ The rate to this point by barge is $1 65.

¶ Freightst to this point are very irregular, and the quotations merely nominal.

From Philadelphia to all places on the Hudson River the rate is 85c, and discharging and towage according to destination.

The Geneva, Ithaca and Athens Railroad Co.

Coal Tariff takes effect September 1st, 1875.

Rates from *State Line*, on a consignment of coal of not less than 25 tons of 2240 lb. will be as follows:

To *Ithaca* (local), 75c.; to *Geneva* (local), $1 50; to *Geneva* or *Cayuga* for *Buffalo* and *Tonawanda*, 92c.; *Geneva* or *Cayuga* for *Rochester* and *Charlotte*, $1 18; *Geneva* or *Cayuga* for *Phelps Junction*, for S P. S. and L. O S. R. R.'s, 92c.; *Geneva* or *Cayuga* for all other points on N. Y. C. R R., $1 18

Rate from *Lackawanna Junction* to *State Line* on coal for all points on the G. I. & A. (excepting *Geneva*), and C. L. R. R's., $2; *Ithaca* (shipment), $1 41; for *Geneva*, $1 41. For all other points on the N. Y. C. & H. R. R. R., $1 41.

Rate from *State Line* to *Van Ettenville* for all points on the Horseheads Division of the U. I. & E. R. R., 34c. Rate from *Van Ettenville* to any *point* on said Division, 33c.

Rate from *State Line* to *Ithaca*, for *Buffalo*, *Rochester*, *Syracuse*, and all other points via Erie Canal, 55c.

Rate L. & B. *Junction* to f. o. b. boats at *Ithaca* for *Buffalo*, or other Canal points, $2 06 per gross ton.

Rate L & B. *Junction* to *Buffalo*, *Black Rock*, *Susp. Bridge*, (via *Geneva*), all rail $3 97 per gross ton.

Rate L. & B. *Junction* to *Rochester*, all rail $3 44 per gross ton.

Canal freights, *Ithaca* to *Buffalo*, $1 10 net ton; to Rochester, 75c. (subject to change).

Freight on Nova Scotia Coals.

Pictou, Nova Scotia, to	New York	$1 80
" " "	Portland, Me	2 00
" " "	Montreal, Canada	2 35
" " "	Quebec. "	1 80
" " "	Halifax, N. S.	1 25

Pilotage for vessels of from 80 to 150 tons. $6 inward and $4 outward. From 150 to 1000 tons, 10 to $17 inward and $6 to $12 outward. Vessels of 1000 tons and upwards, 2c. per ton inward and 1½c. per ton outward.

Towage 3c. per ton. Trimming 3 hatch vessels, 6c. per ton. Two hatch vessels 7c. per ton.

Delaware and Raritan Canal.

Tolls and Steam Towage.

Per 2240 lb. Cargoes to exceed 110 tons.

From Fairmount to New York, towing limits within 53d st.				74c.
" Greenwich	"	Bituminous		64c.
" "	"	Anthracite		69c.
" Lambertville	"	Anthracite		62c.
" Port Richmond	"	..		68c.
" " "	"	Semi-bituminous coal,		6[illegible]c.
" Philadelphia	"	Cumberland	"	5[illegible]c.
" Trenton	"	Anthracite	"	37c.

Towing,

From foot of 23d Street, East River, and *return*, *per ton*.

	cts.		cts.
Bridgeport, Conn	33⅓	New Haven and Norwalk, Conn	33½
Hartford and Stonington, Conn	75	New London, Conn	60
Norwich, Conn	68	*Derby, "	33⅓
Stamford, Conn., per boat	$75	Harlem, N. Y., per boat.	$18
Whitestone, L. I	$30	Glen Cove, L. I	50

	cts.
Manhattanville, via Hudson River, per ton	8
Harverstraw and Peekskill, via Hudson River	16
West Point and Cold Spring " "	17
Rondout " "	23
Yonkers, boats of 100 tons capacity " " per boat.	$15
Sing Sing and Peekskill " " " "	20

* $50 per boat extra is charged for towage to this point.

Boats having less than 200 tons will be charged the same to Eastern points as if carrying that quantity.

THE BRITISH COAL AND IRON TRADES.

LONDON, Sept. 25, 1875.

THE IRON TRADE.

A revival is apparent in several of the districts. An active demand continues in the North-of-England; a better demand exists in North and South Lancashire; and considerable quantities of pig iron have been placed in the Barrow district during the week. This activity is, however, accounted for by the approach of the close of the shipping season; and should the existing quiet demand for home consumption continue during the winter—and there are no indications of an improvement, but rather the reverse - great sluggishness is inevitable for the winter months. The manufactured iron trade continues in a very depressed condition, with no indications of an improvement this year, although a better business is anticipated next year. The business in Bessemer steel is, upon the whole, quite active.

The following are the leading quotations of iron:

——	Tees, f.o.b.	Barrow, f.o.b.	Liverpool, on trucks.
No. 1 Pig	59/	*80/	70/6
No. 2 "	56/	*77/6	
No. 3 "	54/	*75/	68/
No. 4 Forge	48/9	74/	65/
Common Bars	150/		£8 10/
Rails	135/@140/		142/6@147/6

* Bessemer Pig.

Common bars in South Staffordshire, £7 10/, and marked bars, £10—12/6 extra for Lord Dudley's. Iron rails in Wales £6 15/, and bars £7 10/; Steel rails, £9@£9 10/. Steel rails at Liverpool and on the East Coast, £9 15/@£10 10/.

THE COAL TRADE.

There is a better demand in some districts for certain descriptions, but prices are not more than fairly sustained in any instances, while in some they are inclined to weakness. The approach of winter is making a better demand for households, and the gas companies are completing their supplies. Tyne coals are quoted f. o. b. as follows: steam, 12/6d.@16/; households, 11/@15/; and gas coals, 8/6d.@10/. Hetton gas coal f. o. b. Sunderland is quoted at 10/6d.; common steam coal f. o b. Liverpool 10/; South Wales coals f. o. b. Cardiff as follows: best doubled screened steam coal, 12/9d.; colliery screened, 11/3d.@12/; household, 10/; coke, 14/6d.@16/.

THE LABOR MARKET.

The men at the Roundwood Colliery stopped work on 21st inst., owing to 4d. per week having been stopped from them for oil. A temporary arrangement was entered into and the men resumed work on the following day. It is intimated that a similar reduction is to be made from the men of the Aldwark Main Colliery.

The wages of the miners of the Ashton Coal and Iron Company having been reduced 15 per cent., they stopped work on the 18th inst.

The iron workers' strike at Sheffield terminated on the 21st inst. There is no disposition on the part of the employees of the Parkgate Ironworks to submit to the reduction of 5 per cent.

The labors of the Board of Conciliation for Monmouthshire and South Wales are likely to be resumed. The men's delegates have voted that Mr. MACDONALD be continued on the Board, whereupon Mr. VIVIAN has again tendered his resignation, and in case of its acceptance (which is quite probable), Sir GEORGE ELLIOT or DAVID DAVIES, Esq., M. P., will likely be appointed instead. A further reduction of wages will probably be discussed as soon as the Board resumes its labors.

THE INGERSOLL ROCK DRILL.

The Ingersoll Rock Drill secured the only silver medal awarded by the jurors of the Society for the Promotion of Scientific Industry, at Manchester. This drill also took the prize offered by the Royal Cornwall Polytechnic Society, at Falmouth, on the 15th inst.

CO-OPERATIVE MINING.

The Annual report of the Co-operative Mining Society (Limited) of Derbyshire shows a loss of over £11,000.

SCOTLAND.

THE IRON TRADE.

Prices have increased during the week, owing to a demand from the miners for an increase of wages. Warrants have ranged from 66/6d.@67/1½d., and closed yesterday at 66/9d.@67/1½d. Stocks in CONNAL & Co.'s stores are 60,015 tons, or an increase of 1,489 tons since last week. The shipments of pig iron for the week ending the 18th instant, were 11,501 tons as against 14,226 tons for the corresponding week of 1874. The total increase in shipments since December 25, 1874, is 89,547 tons, as compared with the corresponding period of 1873-74. The following are the prices of some of the leading makers' brands of No. 1 pig iron: Gartsherrie, 77/6d.; Coltness, nominal; Summerlee, 68/; Langloan, 78/; Carnbr e, 68/; Monkland, 67/; Glengarnock, 70/6d.; and Eglinton, 66/. Freights are as follows:—To New York, 5/; to Boston, 12/6d.@14/; to New Orleans and Baltimore, 5/@6/; to Philadelphia, 12/@14/; and to San Francisco, 27/6d. The malleable and manufactured iron trade is very dull.

THE COAL TRADE.

There is no improvement in the coal trade. There is a better demand for house coals, but the demand for shipment is very light. An advance of miners' wages is being agitated, but with no good results for the miners. Mr. MACDONALD is making an effort to resuscitate the Unions. The miners' wages in the Kilmarnock district have been reduced to 4/6d. per day. The men, after two days idleness, submitted to the reduction.

IRON MARKET REVIEW.

Import Duties.

The following are the duties in Gold:

Flat Iron, not less than 1, nor more than 6 inches wide, nor less than ¾, nor more than 2 inches thick. *Round Iron*, not less than ¾, nor more than 2 inches in diameter, and *Square Iron*, not less than ½, nor more than 2 inches square per pound 1 c.

Flat, Round or Square Iron, of larger or smaller sizes than the above mentioned, per lb ..... 1½c.

Provided, that all iron in slabs, blooms, loops, or other forms, less finished than bars, and more advanced than pig iron, except castings, shall pay the same as iron in bars.

Provided, that none of the above iron shall pay less than 35 per cent.

Railroad Bars—Iron ..... 70c. per 100 lb.

Railroad Bars—Steel ..... $1.25 per 100 lb.

Boiler plates, or other plate iron not less than 3-16 of an inch thick, per lb ..... 1½c.

Scrap Castings per ton $6 00

" *wrought* " " ..... 8 c.

Pig Iron per ton ..... 7 co

Iron ore 20 per cent. *ad valorem*

Antimony, crude or regulus, 10 per cent.

Copper Ore—On all fine contained therein, 3c. per lb.

Old Copper, fit for manufacture only, 4c. per lb.

Copper, pigs, bars, ingots or plates, 5c. per lb.

" sheets, bolts, nails, spikes, rods, pipes, &c., 45 per cent

Tin, in bars, blocks or pigs, and grain tin, free.

Tin Plates, or sheet, and terne or taggers tin, 1 1-1cc. per lb.

Lead—Bars or pigs, 2c. per lb. Old lead, for manufacture only, 1½c. per lb. Pipes, shot and sheets, 2¾c. per lb.

Zinc, in blocks or pigs, 1½c. per lb.; in sheets, 2¼c. per lb.; manufactures of, 35 per cent.

Quicksilver free.

New York.

FRIDAY EVENING, October 8, 1875.

American Pig.—There is no change in the demand or price of this article. There are a few small sales being made at regular quotations. What concessions in prices could be secured by buyers, can only be determined by negotiation. Makers are aware that low quotations would not induce buyers to come forward, although when they appear and make important inquiries, there is then an inclination to make concessions in accordance to the quantity of iron to be sold. There have been rumors for some time of large sales of hypothecated pig iron in Philadelphia. From all we can learn on the subject, a bank demanded its advances, and a large corporation furnished the money and took the iron as security. We quote No. 1 foundry at $25; No. 2 at $23; and forge at $20@22. There are some companies who are asking higher prices, but with the number of good brands that are offering at the above prices, we do not see how they can sell, except to a few who are of the belief that only one brand of iron will answer their purposes.

Scotch Pig.—The latest Glasgow quotations show a slight decline. Prices here are maintained at $33 50 for Coltness; $32 50@33 for Gartsherrie; $31 50@32 for Summerlee; and $29 50@30 for Eglinton. We are reported sales of 100 tons of Coltness and 100 tons of Summerlee on private terms, and 100 tons of Eglington at $29 50. Our latest mail advices report that the stocks in CONNAL & Co's store at Glasgow, continue to increase, but that there is still a good foreign demand, although the demand for home consumption is light. The advanced prices have been, in part, sustained by an effort on the part of the miners to have their wages raised. As the Unions are very much disorganized the prospects of this movement being a success are not good.

Rails.—There has been no further business reported, although numerous inquiries continue in the market. We continue to quote at $45@$50 for iron rails at mills, and $70@$72 for steel.

Old Rails.—In the absence of business we quote nominally at $26.

Scrap.—There has been no further business reported. We quote nominally at $32@$32 50.

Baltimore. Oct. 4, 1875.

Specially reported by Messrs. R. C. HOFFMAN & Co.

The iron market continues without any material change, and we repeat last weeks quotations, as follows :

Baltimore Charcoal	$32@35	Anthracite No. 3	$22@23
Virginia Charcoal	30@34	Mottled and White	1.@21
Anthracite No. 1	25@26	Charcoal C. B Blooms,	70@75
" No. 2	23@24	Refined Blooms	60@65

Boston. Oct. 7, 1875.

Specially reported by Messrs. E. P. CUTLER & Co.

Since our last communication there has been but little trade done here in pig iron. The prices for job lots are firm, but it would be difficult to make sales of any large lots to consumers, unless at very low figures.

We have to note the sale of several hundred tons of charcoal pig iron, made by the Piscatquo Iron Works, Maine. This iron goes to a consumer in the leading iron region of the country, from which we infer that its quality is desirable. Scrap is selling in small lots at quotations.

PIG rules very dull with a slightly better tone to forge than foundry, this result being developed out of the larger purchases of the former stock. The reports from Pennsylvania of more furnaces blown in are understood here to mean those of forge iron workers.

We quote nominally No. 1, $29@30; No. 2, $24@27, and gray forge, $21@24.

BAR is selling more closely to brand than has ever been known, and refined iron not guaranteed will fail to realize more than the ordinary quotations for common. Good refined iron quotes from $58 to $60, with straight lots selling to good parties at $57 50. This is the bottom price with no extras. There has been considerable of an effort by the brokers here to sell bi ls to our dealers, but the winning man dropped in from the West on Monday and sold 1000 tons delivered in Boston at $56 75, cash, 15 days, every bar warranted.

STEEL is selling in a fairly steady way for machinery, while sleigh builders are in, taking moderate quantities of sleign steel. A little inquiry exists for tool steel, but prices fluctuate according to the popularity of brands, and sales are made almost even with the quotations at shipping points.

We quote American tool 14@15c., American machinery, 9@9½c ; Bessemer tires, 7@7½c.; Sweet's Excelsior tire, 8½@12c.; English tool, 16@18c. gold.

COPPER is selling in a trivial way, with prices quoting from 23¼ to 23½ firm. The disposition is just now more manifest for selling spot lots, the stronger or higher tone being on futures. In manufactured there is a quiet business with prices unchanged.

For manufacturers we quote : New Sheathing, 30c. ; Bolts and Braziers, 31c.; Yellow Metal Bolts, 20c.@29c.

LEAD is without interest in any particular, and prices hang in a flabby way; buyers being rather more favored than sellers.

We quote Pig 6c. for domestic and 6¾c.@6¾c. for foreign ; Sheet and Pipe Lead, 9¼c. currency ; Tin-Lined Pipe, 16½c.; Bar Lead, 6½c., less usual trade, or 10 per cent. discount.

ANTIMONY is firm, with very little business, quoting from 13½c.@13½c., as to lots bought.

SPELTER is strong and dull at $7 55, 30 days, and $7 40 prompt cash, all currency. Silesian is having a trivial business at $7 30.

TIN is somewhat buoyant, from the stronger position of holders abroad. There is no marked quickening to the demand, but the inspiration for advance seems to spring largely from the London combination changing their quotations. Prices here are firmer, but as yet no actual advance has been established.

We quote Straits, 18½c.@19c. ; Banca, 23c.; Refined English, 18½c.@19c. gold. Plates are active ; we quote Charcoal I. C , $9 50@$10 ; Coke, $7 75@$8 ; and Terne at $7 50@$11 gold.—*Commercial Bulletin.*

Chicago. Oct. 4, 1875.

Specially reported by Messrs. ROGERS & Co., dealers in Scotch and American pig iron.

Below we hand you our market quotations for pig iron. Terms 4 months.

No. 1 Coltness	$40 00@ ....
No. 1 Gartsherrie	40 00@ ....
No. 1 Summerlee	38 00@ ....
No. 1 Glengarnock	37 00@ ....
No. 1 Eglinton	36 00@ ....
Warner's "American Scotch"	34 00@ ....
Massilon No. 1 Foundry	31 00@ ....
No. 1 Grand Tower Mo. ores (Bituminous)	29 00@ ....
No. 2, " " "	28 00@ ....
No. 1 Mill	25 00@ ....
No. 1 Foundry, Ohio	28 00@ ....
No. 2 " "	27 00@ ....
No. 1 Hanging Rock (charcoal)	30 00@ ....
No. 2 " " "	24 00@ ....
Union "A" 1 (Anthracite)	28 00@ ....
Union "B" 1 (Anthracite)	26 00@ ....
No. 1 Lake Superior (charcoal)	30 00@ ....
No. 2 Lake Superior "	28 00@ ....
No. 3 Lake Superior "	30 00@ ....
No. 4 Lake Superior "	32 00@ ....
Bessemer Steel Rails	72 00@ ....
New Iron Rails	50 00@ ....
Old Rails	28 00@ ....

Cincinnati. Oct. 5, 1875.

Specially reported by Messrs. TRABER & AUBERY, commission merchants for the sale of pig iron, blooms, ore, etc.

Below please find closing quotations of our pig iron market, viz.:

CHARCOAL.

Hanging Rock, No. 1 Foundry	$26 00@27 00—4 mos
" No 2, "	24 00@25 00—4 mos
" Mill	23 00@24 00—4 mos
Tennessee No. 1, Foundry	24 00@25 00—4 mos
Tennessee, No. 2, "	23 00@24 00—4 mos
" Mill	22 00@23 00—4 mos
Missouri, No. 1, Foundry	@ —4 mos

STONE COAL.

Ohio, No. 1, Foundry	23 00@24 00—4 mos
" No. 2, "	22 00@23 00—4 mos
Ohio Mill	21 00@22 00—4 mos
Missouri, No. 1 Foundry	27 00@28 00—4 mos
" No. 2, "	26 00@27 00—4 mos
" Mill	26 00@27 00—4 mos

CAR-WHEELS.

Hanging Rock, C. B	40 00@50 00—4 mos
Tennessee "	30 00@35 00—4 mos
Missouri "	35 00@40 00—4 mos
Alabama "	30 00@35 00—4 mos

BLOOMS.

Charcoal	60 00@ 80 00—cash

SCRAP IRON.

Cast	60c.@ 90—cash
Wrought	1 00@1 35—cash

Cleveland, Ohio, Oct. 2, 1875.

Messrs. C. E. BINGHAM & Co., quote as follows :

Per gross ton, on four month's time. Subject to change in market. Discount for cash 4 per cent.

FOUNDRY IRON.

No. 1, Lake Superior Charcoal	31 00@....
No. 2. "	30 00@....
No. 1. Anthracite	28 00@....
No 2, "	26 00@....
No. 1, Bituminous foundry	27 50@ ...
No. 2, " "	26 00@....
American Scotch, No. 1, Cherry Valley	31 00@....
" " B—1, " "	28 50@....
" " No. 2, " "	27 50@....
No. 1, Massilon	30 50@....
B—1, "	28 00@ ....
No. 2, "	25 50@....

CAR WHEEL AND MALLEABLE IRON.

No. 3 Lake Superior Charcoal	30 00@....
No. 4 " " "	32 00@....
Nos. 5 and 6 " "	32 50@....

BESSEMER IRON.

Nos. 1 and 2 Lake Superior Charcoal	30 50@....

FORGE IRON.

No. 1, Gray	24 50@....
White and Mottled	23 50@....

Indianapolis, Ind. Oct. 2, 1875.

Specially reported by NELSON KINGMAN, broker and dealer in pig iron, etc.

Trade very dull at prices named below.

New Rails at mill	$48 00@50 00
Old Rails "	24 00@26 00
Hanging Rock Charcoal Pig No. 1 foundry	28 00@29 00—4 mos
" " " " " 2 "	26 00@28 00—4 mos
" " " " Mill	24 00@26 00—4 mos
Car Wheel C. B	40 00, nominal.

STONE COAL.

Indiana No. 1 Foundry pig Red Short	24 00@26 00—4 mos
" 2 " " "	22 00@24 00—4 mos
" 1 Forge " "	@ —4 mos
" 2 " " "	@ —4 mos
Ohio No. 1 Foundry pig Cold Short	25 00@26 00—4 mos
" 2 "	24 00@25 00—4 mos
" Mill	23 00@24 00—4 mos
" No. 1 Foundry, Neutral	26 00@28 00—4 mos
" No. 2 " "	25 00@27 00—4 mos
Merchant Bar	2½c.—3 mos
1st quality C. H. No. 1 Boiler Plates, per lb	5 c.—3 mos
1st " Com. Sheet for No. 24, W.G. "	4 c.—3 mos
1st " Charcoal Sheet " " "	5½c.—3 mos
Best Bloom Galvanized Shoet, discount 20 per cent	—cash.
2d quality " " " 30 "	—cash.

f. o. b. in Indianapolis.

Louisville. Oct. 5, 1875.

Specially reported by Messrs. GEORGE H. HULL & Co.

The mills and foundries, as a general thing, are full of work, and there is more demand for iron, but prices show no improvement. The usual time, 4 months, is allowed on the quotations below.

HOT BLAST—CHARCOAL.

No. 1 foundry, from Hanging Rock Ores	$25 00@26 00
No. 2 " " "	23 00@24 00
No. 1, Mill, from " "	22 00@23 00
No. 1, foundry, from Alabama, Georgia and Tennessee ores	23 00@24 00
No. 2, foundry, from Ala., Geor'a and Tenn. ores	21 00@22 00
No. 1, Mill, from " " " "	22 00@23 00

HOT BLAST—STONE COAL AND COKE.

No. 1, foundry, from Hanging Rock ores	23 00@24 00
No. 2, " " " "	22 00@23 00
No. 1, Mill, " " " "	21 00@22 00
No. 1, foundry, from Ala. Ga. and Tenn. ores	23 00@24 00
No. 2, " " " "	22 00@23 00
No. 1, Mill, " " " "	21 00@22 00
No. 1 foundry, from Missouri ores	24 00@25 00
No. 2 foundry, from Missouri ores	24 00@25 00
No. 1 Mill, from Missouri ores	26 00@27 00

COLD BLAST—CHARCOAL.

Car Wheel from Hanging Rock ores	35 00@40 00
" " Tennessee "	28 00@30 00
" " Alabama and Georgia ores	28 00@30 00
" " Kentucky ores	28 00@40 00

Milwaukee. Oct. 2, 1875.

The following are the present prices, per ton of 2,240 lb. :—

Frankfort L. S. Charcoal, No. 1.	$30 00
" " " No. 2 & 3	28 00
" " " No. 4 & 5	31 00
" " " No. 6	35 00
Mil. Anthracite L. S., No. 1	30 00
" " " No. 2	28 00
Wisconsin Iron, No. 1	26 00
Mahoning Valley Bit's No. 1	32 00
" " " No. 2	30 00

Pittsburgh. Oct. 5, 1875.

The *American Manufacturer* says :

"PIG IRON—Wednesday, October 6, 1875.—There has been no improvemeut to report since the date of our last report. But few of the mills are running their puddling furnaces more than single turn, some have stopped altogether.

"MANUFACTURED IRON.—Manufacturers very generally continue to report trade very dull and unsatisfactory ; production is falling off; but very few, if any, of the mills are working more than single turn ; some have shut down voluntarily, while others have been forced to it in consequence of financial embarrassments ; stocks are light. We continue to quoto merchant bars at $2 25@ $2 40, sixty days, with two per cent off for cash.

"STEEL — There is a continued fair demand for all the leading grades of steel.

PIG METAL SALES REPORED FOR THE AMERICAN MANUFACTURER FOR THE WEEK ENDED OCTOBER 6, 1875.

BITUMINOUS COAL OR COKE, SMELTED FROM L. S. ORE OR L. S. AND NATIVE.

20 tons No. 1 foundry,	$25 00—4 mos.
150 tons gray forge	24 00—cash.
230 tons gray forge close	23 50—4 mos.
180 tons white and mottled	21 50—4 mos.

We hear of some other sales of bituminous irons, but as we have not full particulars we do not report them."

Richmond, Va. Oct. 5, 1875.

Reported by ASA SNYDER, Esq.

No change in the iron market worthy of notice.

San Francisco, Cal.

From the *Commercial Herald*, Sept. 23, 1875.

The market for all sorts of manufactured goods is exceedingly dull and inactive, and quotations are more or less nominal, being simply jobbing rates. Pig iron is now in full stock. The demand for tin plate is surprisingly small, and quotations are entirely nominal. The stock is thought to be large. The supply of Sydney pig tin is liberal, with a limited demand ; price 22¼c. Banca tin is held at 25@26c The stock of Yellow Metal is not large, and when suits are required they are ordered from the East by rail. The market for American cast steel is well supplied, and is fast taking the place of best brands of English. The trade are carrying large stocks of manufactured iron—bar, sheet, bundle, etc.—prices of which remain the same as for a long time past. Selby's pig, sheet, and bar lead is in good stock, and prices unchanged. We quote spot lots Scotch and English pig iron at $35@38, in lots, according to brand and quantity. Invoices of same to arrive can be bought at $32@33.

St. Louis. Oct. 5, 1875.

Specially reported by Messrs. SPOONER & COLLINS, Commission Agents for all kinds of Iron.

We have no special change to note the past week. The demand is fair for small lots, but prices are still very unsatisfactory and low. We quote on 4 months :

BITUMINOUS.

Missouri, No. 1	$27@28	Massillon A No. 1	$35@36
" " 2	$25@26	" B " 1	$33@34
" " 1 Mill	$24@25	" " 2	$32@33

CHARCOAL—HOT BLAST.

Missouri, No. 1	$27@28	Tennessee, No. 1	$26@27
" " 2	$25@26	" " 2	$24@25
" Mill	$24@25	" Mill	$23@24
Hanging Rock, No. 1	$28@29	Georgia, No. 1	$28@—
" " " 2	$26@27	" " 2	$26@—
" " " 3	$25@26	" Mill	$24@—

CHARCOAL—COLD BLAST.

Missouri Car Wheel	$33@35	Tennessee " "	$33@35
Alabama " "	$33@35	Hanging Rock "	$5c@53

MISSOURI BLOOMS AND BILLETS.

Charcoal Blooms	$75@85	Hammered Billets	$90@100
Scrap "	$70@75		

METALS.

NEW YORK, Friday Evening, Oct. 8, 1875.

A very fair business has been done in all articles, and a much better feeling prevails than existed several weeks ago. Advanced prices are looked for in some articles, while in all it is expected that prices will be maintained.

Mr. ERNEST W. G. MURRANT, of London, under date of September 24, says :—"A moderate business has been done in metals during the past week, but as yet indications of a revival in the trade are few and far between. No great change is expected to occur in the present year. There appears some probability of an alteration being shortly made in the bank rate."

Gold Coin.—During the week past gold has ranged from 116¾@117⅛, and closed at 116¾.

Bullion.—Fine silver bar is quoted at $1 22@$1 23, gold, per ounce, and fine gold bar at par ($20 67 gold, per ounce,) to ¼ per cent. premium.

Copper.—There has been a little better inquiry from manufacturers during the past week. The sales reported aggregate about 500,000 lb. at 23¼@23⅜c., which are the asking prices to-day, with 23¼c. bid. Baltimore copper is quoted at 23¼c. The business doing is entirely for consumption, there being no speculative feeling in the market. The latest London quotation is £82 10/. Advices by cable, to-day, reported the market more firm.

Of copper, Mr. MURRANT says :—"In Chili a sale of 500 tons was reported as made on Tuesday. It is to be presumed that some of the large sales reported are merely

speculative operations, as if not, stocks would very soon vanish altogether. As it is, such transactions appear to have little or no effect on the market. Beyond the above business but little has been done. It is hoped that the next charters may be small, and a recovery might then be looked for. The sales have been 850 tons of g. o. bs. and named brands at £81 to £82 10/ for cash and arrival."

Tin.—Since our last there have been about 2000 slabs of pig tin moved, and prices are well maintained. Straits is quoted at 20c. gold; L. & F., 19¼c.; Refined, 20c.; and Banca, 24c. There is but very little Refined in the market. Owing to the very inferior quality of the Australian stock here and in Europe, it is expected that attention must be drawn to other tins, with the probable result of a material increase in prices. Prices in London declined a little during the week, but are quoted by cable, to-day, at £86@£87. Singapore quotations of Wednesday were $24 per picul.

Of tin, Mr. MURRANT says:—"In foreign a large amount of sales have been reported during the week at improving values, and the tone of the market has been firm. A certain amount of irregularity was, however, observable; continued speculative buying, in the opinion of many, would send the price to £100 in a short time. It will be remembered that it was pointed out in the corresponding sheet to this in August last, that a turning point must sooner or later be reached. Meanwhile, the article is still obtainable for forward shipment below cash prices. The reported business is about 500 tons Straits, and 350 tons Australian at 80/ to 85/ fer cash and shipment."

Tin Plates.—A very fair business has been done during the past week. The quotations to-day are: Charcoal bright, per box $7 50@7 75 gold, and ternes $6 87½@7 50; coke tins $6 37½@6 75, and ternes $6 12½@6 50 gold, per box. The supply of cokes is reported to be very light. Cable advices report very heavy sales in England for American account, and an advance in prices to figures that make the cost of importation considerably greater than the ruling quotations here.

Messrs. ROBERT CROOKS, of Liverpool, under date of September 23, say of tin plates:—"Our last report showed from the Board of Trade returns, an increase in the export to the United States and Canada of about 10,000 tons weight, as compared with the shipments in 1874. Notwithstanding this increase in shipment, most of the makers complain of the dullness of trade, which makes it evident that the power of production has augmented considerably. Till this is curtailed, which will, probably, result from the depression now prevailing, we must look for a continuance of dull trade. Makers are now booking freely at present prices for delivery until the end of the year; and, in some cases, where they have been fortunate enough to book sufficient to keep going for a month or more, 6d. per box advance has been asked and obtained where a brand was specially wanted."

Lead.—The inquiry at the present time is very quiet, although considerable has been sold during the week. 300 tons of "Richmond" lead were sold from dock at 5.50c., and a considerable portion was resold at 5.60c @ 5.65c., the latter being the asking price for this brand. Sales of other brands of lead have been made in a small way, and aggregating but little. The above-mentioned brand was unknown upon this market, and upon trial is found to be inferior to other brands heretofore used here. The better brands are quoted at 5.70c.@5.75c. There is nothing to report in foreign, which is quoted at 7¼c., gold. The St. Louis market is quoted at 7c. currency, with a pretty active business.

Spelter and Zinc.—Domestic spelter is moving in small lots at 7¼c., currency. There is nothing doing in Foreign, which is nominally quoted at 7¼c.@7¼c., gold. There have been large transactions in sheet zinc, and owing to the scarcity of the article an advance has taken place. We quote at 9c.@9¼c., gold.

Antimony.—With some business doing, we quote at 13¼c.@14c., gold.

Quicksilver.—The London price has advanced to £14 14/ per flask. The quotation here is 90c., and in San Francisco, 85c., gold.

The San Francisco *Commercial Herald*, of September 23, says:

A week since the London quotation was £12, since then the price there has been advanced to £14; this is a rise of £4 within 60 days. The solution of this is, that the Rothschilds, desirous of renewing their contracts with Spain, reduced the market price to about £9, and after concluding their contract with the Spanish Government for a series of years, again put up prices as recorded above. The result is an advance the world over, causing free purchases here for the China market. At the close of last week, purchases here were made at 68@70c. cash, since then sales at 72c. up to 82c. in lots; some parties now ask 85c., and others refuse to name a price. The steamer for China, October 1st, will no doubt carry a large shipment. The receipts since our last are 1,273 flasks. Exports by sea, same time, 1,264 flasks to China, valued at $65,186; 25 flasks to Japan, valued at $1,339.

Sundry Quotations.

Fire Brick per 1000 (B. KREISCHER & SON)	$40@45@50 00
Clay retorts 12x20@15@30	30@45 00
Tiles and blocks per 100 cubic inches	12
Ground clay per bbl	2 50
" brick "	4 00
Rosedale cement per bbl	$ 1 10@ 1 15
Portland " "	3 60@ 4 25
Roman " "	3 50@ 4 25
Keenes coarse cement per bbl	8 00@ 8 50
" fine " "	12 00@12 50

FINANCIAL.

New York Stocks.

FRIDAY, October 8, 1875.

The feature of the week on the New York Stock Market has been the decline in the shares of the Central R. R. of New Jersey. This stock, under sales of nearly 9000 shares during the week's operations, has declined from 108 to 100½ ex dividends. This decline is a matter of surprise in stock circles, and many theories are advanced to account for it, but none of them are sufficiently defined to place any reliance upon; rumors of a combination among some of its rivals are afloat, but cannot be traced to any definite action. The Delaware, Lackawanna and Western R. R. shares show a decline of 3 per cent. between the extreme limits, compared with quotations ruling in our last. Transactions, aggregating nearly 6000 shares for the week are reported. From the report of this company for the first eight months of the year, to September 1, the net earning on $25.000,000 capital, after bearing $2.440 000 interest and lease charges, and $1,250,000 dividends, two of 2½ per cent. quarterly each, left sufficient for the October dividend, and a liberal surplus to be carried over to the next dividend account and a month's business (September) yet to be added.

The general market closed weak, and a decline has taken place throughout the list. Mariposa Land and Mining Company's stock exhibits a slight decline, with but few transactions for the week. The Tunnel is 1185 feet long, and has passed through the hard rock into softer ground. The heading is now in a vein which is stated to be either the east spur or the main vein of the great mother lode of California.

Prices of bonds have been fairly maintained, with slightly increased sales.

Quotations and Sales of Stocks and Bonds,

For the week ending Oct. 8, 1875.

STOCKS.

	Highest	Lowest	Closing	Shares sold.
Pennsylvania Coal Co	—	—	275	—
Consolidation Coal Co	45¼	44⅞	44⅞	1100
Spring Mt. Coal Co	—	—	†67¼	—
American Coal Co	—	—	55†	—
Maryland Coal Co	—	—	19†	—
Cumberland Coal and Iron Co	—	—	116	—
Del., Lack., and West. RR. Co	120	117¾	117¾	5700
New Jersey Central RR. Co	108	100¼	10. ¾	8951
Delaware and Hudson Canal Co	120¾	119⅞	119⅞	255
Quicksilver Mining Co. pref'd	—	—	20	200
" " " Common	16	15¼	16	200
Mariposa Land & Min. Co. various.	—	—	10½	100
St. Louis & Iron Mountain RR	17¼	16	17¼	105
Lehigh & Wilkes-Barre Coal Co	—	—	—	—
Total Shares sold				16611
Sales for the week previous				3731
Increase				12880

†Asked.

BONDS.

	Sales.		Price	
Ches. & O. R. R. 6s, coupon	—		—	@ 28
" " " ex coupon	—		—	@ 27
Central RR. of N. J. 1st Mtg. N.	9,000		—	@112
" " " 1st Cons.	30,000		†107⅝	@107¼
" " " Cons. Convt.	11,000		—	@†1c8¼
Del. and H. Canal, 1st Mtg. '94	—		—	@110
" " 7s, '77	—		—	@103
" " Reg. '91	—		—	@111
Del., Lack. & W. R. R., 7s, conv.	—		—	@121½
" " " " 2d Mtg.	2,000		—	@111
St. Louis & Iron Mount'n 1st Mtg.	—		—	@ 90
St. Louis & Iron M'tn, 2d Mtg.	2,000		—	@ 54½
Lehigh & W. B. Cons	28,000		97	@ 96⅛
Total Sales	$82,000			

Closing quotations in the absence of sales, represent the latest prices bid.

†Ex. Interest.

Philadelphia Stocks.

PHILADELPHIA, Oct. 1, 1875.

The Philadelphia Stock Market closed yesterday at a general advance compared with our last week's quotations. The week's operations have been very animated, and a decidedly firmer feeling characterizes the whole list. The record exhibits an excess of sales of some 12,000 shares, compared with transactions reported last week.

Quotations of bonds have been barely maintained, dealings for the week, however, are fully equal to the average.

We note a sale of 25 shares of the St. Nicholas Coal Co. at $1 per share.

At auction on the 6th inst., 250 shares of the Cambria Iron Co. sold at $16 per share, also $5000 Emaus Iron Co., 1st mortgage coupon 7s, at 89, and $1000 Pennsylvania Salt Manufacturing Co., coupon 7s at $104.

Quotations and Sales of Stocks and Bonds,

For the week ending Oct. 8, 1875.

STOCKS.

	Highest	Lowest	Closing	Shr's
Lehigh Valley RR. Co	62	61¾	61¾	1193
Pennsylvania RR.	50¾	50⅛	50⅜	20550
Reading RR.	57½	56	5[illegible]†	3144
Lehigh Coal and Nav. Co	50¾	50¼	50¼	11323
Buck Mountain Coal Co	—	—	—	—
Fulton Coal Co	—	—	3½	—
Locust Mountain Coal Co	—	—	—	—
Westmoreland Coal Co	—	—	85	—
Cambria Iron Co	—	—	16	150
Crane Iron Co	—	—	—	—
Emaus Iron Co	—	—	—	—
Pennsylvania Salt Manufact. Co	6	71†	72	261
Total shares sold				36,621
Sales for the week previous				24,668
Increase				11,953

†Ex Dividend.

BONDS.

	Sales.	Price	
H and B. T. RR. 1st mortgage, 7s	—	—	@102½
" " " 2d " "	—	—	@100
" " " 3d " cons	—	—	@ 51½
Lehigh Valley RR. 6s, '98	—	—	@103¾
" " " 7s, 1910	9,000	—	@109¾
" " " con. mtge. 6s reg	12,000	—	@ 99¾
Pennsylvania RR. 1st mtge. 6s	2,000	—	@103½
" " gen. " reg. 1910	22,000	—	@101
" " gen. " 6s, cou	7,000	101	@101¼
Phil. & Reading RR. 6s,	—	—	@101
" deb. bonds	—	—	@ 81¾
" " " G. M. 7s, cou. 1911	1,000	—	@1c8½
" " " " reg. 1911	—	—	@108
" " new convertible 7s '93	24,000	—	@109
Phil. & Reading C. & I. Co. 7s deb. '92	—	—	@ 82½
" " " M.7s, Helf. tract.	—	—	@ —
Lehigh Coal & Nav. Co., 6s '84	1,900	101	@101½
" " " RR., '97	500	—	@102
" " " '77	8,700	—	@ 96½
" " " conv. gold '82	—	—	@100
" " " g. '94	—	—	@105
" " " gold, '97	—	—	@103¾
Penn. Canal, 6s	1,000	—	@ 69½
Penn. and N. Y. Canal, 7s	—	—	@1c7
Susquehanna Coal Co. 7s	—	—	@ 70
Buck. Mount Coal Co. 6s	6,000	—	@ 97⅛
Total amount of sales	$95,100		

Closing quotations, in the absence of sales, represent the latest prices bid.

†Ex Dividend.

Gold and Silver Stocks.

SAN FRANCISCO, Sept. 30, 1875.

The Bank of California resumed operations on the 2d instant, with a guaranteed capital of nearly $8,000,000. On its first day of opening, $700,000 was deposited over and above the amount withdrawn. The Bank of Nevada opened for business on the 4th instant, with a paid-in capital of $5,000 000, so that with these abundant facilities, speculation in mining stocks has again commenced, and a very active market is reported. Quotations, with but very few exceptions, are lower than they were on the 26th of August, the day of the panic—the quotations at that time being at a lower point than they had attained for several months previous. The market since operations were resumed, has been quite irregular. Prices, however, are quoted firm, and an advance seems probable, as confidence becomes restored, and the full effect of the panic removed.

The Crown Point Mining Company has levied an assessment of 50c. per share, delinquent October 8 h. The Meadow Valley Mining Company has levied an assessment of $1 per share, amounting to $60,000, delinquent October 28th. The Justice Mining Company has levied an assessment of $1 per share, aggregating $105,000, delinquent October 18th.

The Amazon Consolidated and Glasgow Gold Mining Companies have each levied their first assessment of 10 cents per share, delinquent October 22d. Both mines are in Lyon County, Nevada.

The El Dorado Water and Deep Gravel Mining Company has levied an assessment of $20 per share, amounting to $75,000, delinquent October 22d. This is the largest assessment levied on this stock, and the fifth this year.

The Phœnix Mining Company have levied an assessment of $3 per share, delinquent October 16th. The mine is in Amador County, Cal., and this is the third assessment.

The total amount of dividend declared by 20 mining Companies on the Pacific coast, from Jan. 1st to Oct. 1st, aggregates $10,230,200. The total amount of assessments levied by 308 companies, for the same period, aggregates $8,708,400. The difference in favor of dividends amounts to $1,521,800.

A new company, called the Pen d'Oreille Gold Mining Company, with a capital of $1,000,000, has been organized in San Francisco to work a gold mine in Mariposa, California.

The Panamint mines owned by Senator Jones have made their second shipment of bullion, valued at about $3,000.

WASHINGTON, Oct. 4th.—The coining and refining operations at the United States Mints and New York Assay Office for the past month show larger results than during any previous month of the present year. The total value of the coinage at the Philadelphia, San Francisco and Carson City Mints for September was $4 987,195, of which $3,415 420 were gold, $557,000 trade dollars, $983,205 subsidiary silver coins. The total number of pieces coined was nearly 6,000,000. During the same period there were refined and parted 182,560 ounces of gold bullion and 1,382,322 ounces of silver, equivalent in value to $3 773,515 for the gold and $1,727,901 for the silver. Repairs were made in the refining and melting department of the New York Assay Office, which interfered with the September operations of that office.

QUOTATIONS :

	No. of shares.	Aug. 25.	Oct. 6.
Sierra Nevada	100,000	$15	10
Union Consolidated	100,000	8	9
Mexican	108,000	19	21
Ophir	108,000	55	55
California	540.000	57	56
Consolidated Virginia	108,000	265	288
Best & Belcher	100,800	47	45
Gould & Curry	108,000	17	17
Savage	16,000	88	80
Hale and Norcross	16,000	47	38
Chollar Potosi	28,000	75	66
Alpha Consolidated	30,000	18	16
Imperial	200,000	21	9
Yellow Jacket	24,000	58	61
Kentuck	30,000	16	12
Crown Point	100,000	26	21
Belcher	104,000	25	15
Overman	36,000	54	37
Caledonia	20,000	18	14
Raymond & Ely	30,000	33	26
Meadow Valley	60,000	5	3
Eureka Consolidated	50,000	27	15
Eureka G. V.	20,000	7	—

Copper Stocks.

BOSTON, Thursday Evening, Oct. 7, 1875.

Specially reported by WILSON W. FAY & CO., Bankers and Brokers, room 7 Traveller Building, 31 State street, Boston.

There is virtually nothing doing in the copper market for the week ending to-night. Sellers are numerous, but prices, as a general thing, very unsatisfactory. The National Mining Company has declared an assessment of $1 per share. Calumet, 159 bid, is the only stock showing any degree of strength. Copper Falls is lower, at 6.50 asked, also Quincy, at 40.20 asked. Eastern Railroad shares have again been the feature of the week, fluctuating between 29 and 22 and closing to-night at $23¼ @$23¾.

The following is the statement of the assets and liabilities of the National Mining Company :

16,875 lb. copper sold at 23c	$3,957 53	
Unpaid assessments	539 00	
Meadow Mining Company	225 00	
Ironside mortgage in litigation	7,500 00	
3,318 Mineral	497 70	
Cash in Boston	249 38	
" at Lake	49 53	
Supplies at mines	3,238 28	
		$16,256 89
LIABILITIES.		
Draft in transit	3,723 35	
Liabilities at mine	4,012 69	
	$7,736 04	
Less advance on tribute	226 00	
		$7,516 04
Balance assets over liabilities		8,740 85

The Gilberton Coal Company announces a dividend of 4 per cent. amounting to $20,000, payable in Boston, Oct. 4th.

DESCRIPTION.	Par Value.	No. of Shares.	CLOSING. Bid.	Asked.
Allouez	$50	20 000	$16	$16½
Calumet and Hecla	50	80,000	159	159 50
Central	25	20,000	32 00	33
Copper Falls	25	20,000	6	6½
Dana	25	20,000	.25	27
Duncan Silver	20	60,000	55	60
Franklin	25	20,000	13 25	13 75
Humboldt	25	20,000	15	17
Madison	25	20,000	20	25
Menard	25	20,000	50	55
Minnesota	25	20,000	2 10	2 37
National	15	20,000	1 co	1 50
Petherick	25	20,000	62	70
Pewabic	25	20,000	6 25	6 75
Phenix	25	20,000		
Quincy	25	20,000	40	40¼
Ridge	25	20,000	6 25	6 75
Rockland	25	20,000	50	60
Silver Islet	—	—	16	17
Star	25	20,000	25	30
Superior	25	20,000	17	20

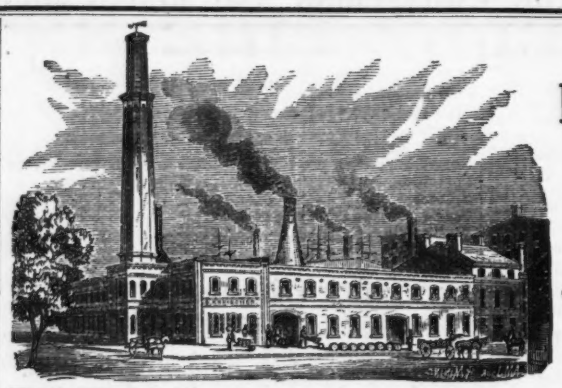
Gas Stocks.

NEW YORK, Oct. 8, 1875.

Gas stocks have been in good demand during the week under review, especially those which are dividend paying, the market closing firm at our quotations. The Citizens' Gas Light Company of Brooklyn, N. Y., has declared a quarterly dividend of 2½ per cent., payable Oct. 15. The Boston Gas Light Company has announced a dividend of 4 per cent. on the 6 per cent bonds of 1880, amounting to $15,000, payable Oct. 1st. We note a sale of Boston Gas Light Company at $775, and 15 shares Newtown and Watertown Gas Light Company at $125. We also note sales of about 100 shares of the San Francisco Gas Light Company stock at our quotations, 93 to 93½.

We are indebted to the courtesy of Messrs. W. B. SCOTT & Co., Bankers and Dealers in Gas Stocks, No. 24 Pine street, New York, for much of the information contained in the following table :

COMPANIES.	Cap. Stk.	Par.	Bid.	Askd.
Mutual Gas Light Co., N.Y. City	$5,000,000	$100	110	112
New York " " " "	4,000,000	100	155	155½
Metropolitan " " "	2,500,000	100	157½	160
Manhattan " " "	4,000,000	50	305	312
Harlem " " " "	1,850,000	50	132	135
Westchester Co. " New York.	466,000	100	100	
Brooklyn " " " Brooklyn	2,000,000	25	245	250
Citizen's " " "	1,200,000	20	152*	155
People's " " " "	1,000,000	10	101	102
Nassau " " "	1,000,000	25	130	
Metropolitan " " "	1,000,000	100	107	110
Williamsburgh " "	1,000,000	50	145	



CLAY RETORTS,

Blocks, Slabs and Fire Brick,

AND

GAS WORKS' SUPPLIES.

B. KREISCHER AND SON.

58 Goerck street,

Cor. Delancey street, E.R., NEW YORK.

Branch Works at Kreischerville, Staten Island.

ESTABLISHED 1845.

J. C. and Hob'n. G. L. Co. N.J.	386,000		160		
People's " " of J. C.			130		
Citizen's G. L. Co., Newark, N.J.					65
Hempstead " " L. I., N.Y.	40,000	100			100
Jamaica, " " " "	25.000	100			100
Citizens', Rochester, "		100	50		65
People's G. L. Co. Albany,"	1,000,000	100	45		
Mutual " Buffalo "	750,000	100	50		
Troy G. L. Co., Troy, N. Y.			1.8		
Brockport, N. Y., G. L. Co.	25,000	100			90
Baltimore G. L. Co., Balt., Md.	2,000,000	100	192		194
People's G. L. Co., Balt., Md	2,000,000	25	26⅝		27
Hannibal G. L. Co., Hanni., Mo.	100,000	100	90		
Lewiston G. L. Co., Lewis., Me	400,000	100			80
Chicago G. L. Co., Chicago, Ill.	2.000,000	100	145		150
Derby G. L. Co., Derby, Conn.	160,000	100			80
Woonskt G. L. Co. Woonskt, R.I.	150,000	100	100		
Fort Wayne G. L. Co. F. W., Ind		100			105
North. Liberties G. L. Co. Phila.		25	29½		
Washington G. L. Co., Phila.			42		43
Portland G. L. Co. Portland, Me	350,000	50	72		75
Hartford G. L. Co., Hartford, Ct	700,000	25	41		43
Boston G. L. Co., Boston, Mass.	2,500,000	500	775		780
Chelsea G. L. Co. Chelsea, "	300,000		130		
Cambridge G. L. Co., Cambridge, "	700,000		132¾		
Louisville G. L. Co., Louis., Ky.			127		
Cincinnati G. L Co, Cincin, O.			208		
S. F. G.L. Co. San Francisco, Cal			93		93½
City G. L. Co. Montreal, Canada	1,440,000	40	125		127½
Consumers G. L. (old.) Tor., Ont	600,000	50	131		
Halifax G. L. Co., Halifax, N.S.		40	143		145

* Ex Dividend.

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DIVIDEND MINES.

CLOSING PRICES—Sept. 25, 4 P. M.

No. of Shares.	MINES.	Par Value of Shares	Bid.	Total Dividends paid.	Last paid.
		£	£	£ s. d.	
10,000	Battle Mountain, c. (6240 sh.) part paid	5	....	0 10 0	Nov. 1872
15,000	Birdseye Creek. g. Cal.	4	1¾	0 14 0	June, 1874
40,000	Cedar Creek. g. Cal.	5	⅛	0 5 0	June, 1873
15,000	Chicago s. Utah	10	4	1 12 0	May 1875
21,000	Colorado Terrible. s.-l. Col †	5	2¼	0 13 6	Jan. 1875
23,500	Eberhardt & Aur'a, s. Nev.†	10	8¼	1 0 0	July, 1871
60,000	Emma, g. s. Utah (35,000 shares part paid	20	1⅜	3 12 0	Dec. 1872
15,000	Ferguson, g. Cal.	2	....	0 3 0	Ap'l, 1872
30,000	Flagstaff, s. Utah	10	1⅛	4 2 0	July, 1873
30,000	Gold Run, hydr, Cal.	1	⅛	0 2 4	Oct., 1872
20,000	Last Chance, s. Utah	5	¾	0 14 0	July, 1873
65,000	London & California. g.†	2	⅛	0 1 0	July, 1875
15,000	Mammoth Cop.c. s. Utah	10	....	0 5 0	Dec., 1872
5,000	Mountain Chief, s. Utah	10	....	0 4 0	Jan., 1873
54,000	Richmond Cons. s. Nev.	5	9¾	2 14 c	May, 1875
125,000	Sierra Buttes, g. Cal.†	2	1⅛	1 14 0	July, 1875
60,000	South Aurora, s. Nev.	5	⅛	0 14 2	Nov., 1873
15,000	Sweetland Creek, g. Cal. †	4	2⅛	3 0 0	Dec., 1874
20,000	Tolima, g. s. (14.000 sh., £4/10 pd)	5	3	0 11 6	May, 1875

NON-DIVIDEND MINES.

		Paid.	Last price.	Last Call.
		£ s.	£	
30,000	Blue Tent, hydr. g. Cal.	5 0	5/	Fully paid
12,000	Camp Floyd, s. Utah	10 0	....	" "
6,000	Clifton, s. Col.	5 0	....	Feb., 1872
10,000	Crescent, g. Cal.	10 0	....	Fully paid
10,000	Douglas. s. Georgetown, Col.	5 0	....	" "
35 000	Excelsior, Hyd. Gld. Cal.	6 0	...	Dec., 1871
60,000	Exchequer, g. s. Cal.	1 0	⅜	Fully paid
10,000	Goetzel Tunnel Co., Col.	7 0	....	" "
40,000	Holcombe Valley, g. Cal.	1 0	1	July, 1873
20,000	Independence, g. Cal.	5 0	2	Fully paid
20.000	I. X. L., g. s. Cal.	5 0	2⅜	" "
15,000	New Pacific, g. s. Nev.	0 10	5/	Dec., 1874
32,500	Ruby Consolidated, s Nev.	10 0	....	Fully paid
15,000	Saturn, s Utah	5 0	...	
10,000	Silver Plume, s. Col.	1 0	...	Fully paid
37,500	Snow Drift. s. Col.	2 0	1⅛	" "
30,000	Tecoma s. Utah	10 0	⅜	" "
14,000	Utah, g.. s.-l. Utah	5 0	⅜	" "

c. copper ; g. gold ; s. silver; s.-l. silver-lead ; † Quoted on the London Stock Exchange. All of the above are Limited Liability Companies.

American Institute of Mining Engineers.

OFFICIAL BULLETIN.

Announcements to Members and Associates.

I. THE ENGINEERING AND MINING JOURNAL, containing the official reports of proceedings, transactions and notices of meetings, will be sent to each Member and Associate on the payment of his annual dues. Back numbers cannot, as a rule, be sent.

II. Dues (ten dollars per annum) are payable on election and at the annual (May) meeting. Members and associates elected at the February meeting pay ten dollars only to May of the following year. Remittances should be made, as far as possible, by P. O. Order, payable to the Secretary.

III. Blank proposals for membership can be had on application to the Secretary.

IV. The Autumn meeting will commence at Cleveland, Ohio, on Tuesday evening, October 26, 1875.

Local Committee : Prof. J. S. NEWBERRY, CHAS. A. OTIS, FAYETTE BROWN, S. A. FULLER, W. C. ANDREWS.

Arrangements will be made for excursions to the Mahoning Block Coal Fields, to the Tuscarawas Black Band Ore Mines, to Kelly's Island, and to the various local Steel, Wire, and Oil Works.

THOMAS M. DROWN, Secretary, Lafayette College, Easton, Pa.

Office American Gas Light Association,

117 BROADWAY, NEW YORK.

The 3d Annual Meeting of the Association will be held in the City of New York, on the 20th of October, 1875, for Election of Officers, and other business incident to the Annual meeting.

All members of the Association are earnestly requested to be present.

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Individual managers of Gas Works, and all persons practically skilled in the construction and management of Gas Works, are also invited to join the Association.

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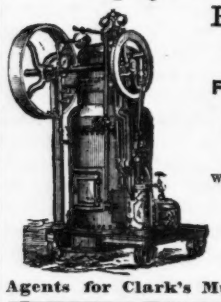

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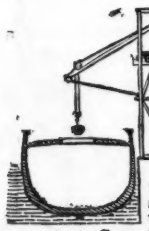

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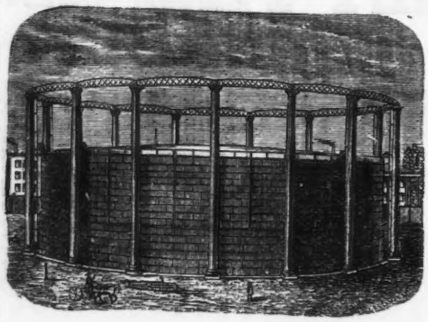

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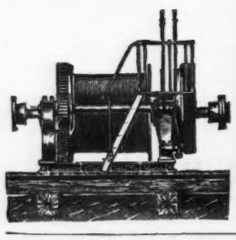

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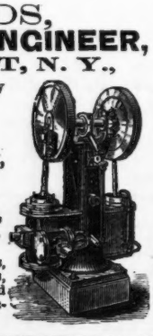

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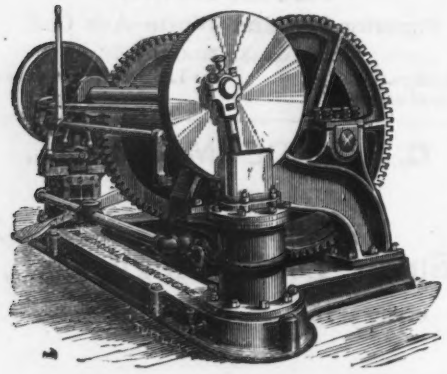

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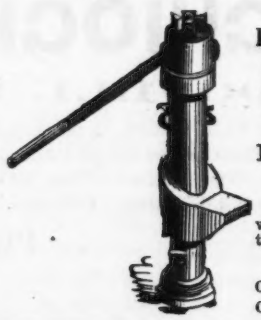

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